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Think that's scary?

Sharks can be terrifying.
But what's really scary,
and even deadly,
is distracted driving.

**Eyes forward.
Don't drive distracted.**



NHTSA





5 delightfully weird PCs you have to see from IFA

There were a lot of laptops and PCs at IFA, but these wonderfully unorthodox machines pushed the envelope to stand out from the crowd. **BY BRAD CHACOS**

Berlin's annual IFA electronics show isn't typically a hotspot of PC news, since it follows hot on the heels of the computer-centric Computex (fave.co/3XFjwBc) in June. Instead, it's usually more of a mobile and smart home event. But not this year!

Intel used IFA to launch its hotly anticipated Lunar Lake Core Series Ultra 2 processors (fave.co/3XpKVus), packing a radical new architecture (fave.co/4gfDRcx)

and seriously improved graphics chops (fave.co/4dZ4Gjp). Not to be outgunned, Qualcomm revealed new 8-core variants of its Snapdragon X PC chips (fave.co/4e0ZICK), aiming to bring multi-day battery life to sub-\$900 laptops.

The result? A flood of laptop announcements at IFA 2024. With so many notebook reveals crammed into such a short time span, however, the deluge felt a bit samey at times—but not with the delightfully

unorthodox systems below, which lean on surprisingly nifty gimmicks to stand out from the crowd.

Without further ado, let's get weird.

1. COOLER MASTER'S \$7,000 SHARK X PC

It's a mini-ITX PC that looks like a cybernetic shark. Cooooool. That's it—that's the tweet.

Cooler Master's Shark X PC (fave.co/3Xm80hA) comes with decent internal components, though it's nothing you couldn't cobble together yourself in a normal case for around \$1,500. But it's the case that makes this beast of a PC so special.

From our coverage: "But you aren't here for the actual parts, are you? You want to know about that robo-shark enclosure (well, sort of enclosure...many of the parts are exposed to open air). It's designed by Thai artist and PC modder Inony, with a frame that poses the 'shark' in a leaping stature about three feet high. Note the MasterLiquid 120 Atmos AIO cooler, with cables that look like teeth coming off of the motherboard."



It's over the top and I want one—though for \$7,000, you'd think they'd throw in a friggin' laser beam on its friggin' head.

2. LENOVO AUTOTWIST CONCEPT LAPTOP

Lenovo got funky and started doing the twist at IFA, with a new AutoTwist concept laptop (fave.co/3z5RVEJ) that uses AI something something to unfold itself and then automatically twist around to face you as you wander around. Again: cooooool.

But that's not all! From our not-so-hands-on time with the laptop: "It's also voice-activated. You can use the command 'Hi Twist' followed by 'open lid,' 'laptop mode,' and 'tablet mode,' and the display will move to the correct position without you lifting a finger. Furthermore, it will also close automatically if you leave the laptop unattended, so someone doesn't steal that amazing idea you just jotted down in a coffee shop while you pop to the bathroom."

I can see this idea gaining some serious traction in high-end ThinkPads and ThinkBooks used by execs wandering around conference tables. I'm not so sure



this would be a compelling feature for more mainstream uses, but hey—it's rad.

3. ACER PROJECT DUALPLAY

Acer's Project DualPlay (fave.co/3N2H0Pz) lets you have your PC gaming cake and eat it too. This unorthodox concept gaming laptop lets you play with mouse and keyboard, just as you'd expect. But when you need to get your *Elden Ring* on, pressing a release button pops out the touchpad—which, as it turns out, is embedded inside a fully functional gaming controller.

Acer says that the wireless touchpad is held in place with an electromagnetic lock, and when it's released the laptop's speakers also pop out from the sides.

Like Lenovo's AutoTwist, DualPlay unfortunately remains a mere concept for

now, but I could see this being a hit with mobile gamers if it ever makes it to the big leagues—especially if Acer really nails the controller feel.

4. LENOVO THINKPAD X1 CARBON AURA EDITION

Lenovo's ThinkPad X1 Carbon laptops rock, and they've rocked for years. The new Aura Edition (fave.co/47EWjHH) appears to keep the streak alive, blending the latest Intel hardware with an impossibly thin and light design (and that iconic little red tracking nub).

But it's the cool new Smart Share feature (ostensibly powered by AI, because of course it is) that captured our attention. From our hands-on coverage: "Lenovo's real party trick here is Smart Share, where you can physically tap your phone on the side of the lid and, like magic, a window pops up with your gallery to transfer your pictures between the two devices.

"Rather than something like NFC to trigger the connection, Lenovo says it uses 'sensor fusion' with elements like listening for the resonance of the tap as well as the accelerometer in the phone. It then uses a combination of Bluetooth and Wi-Fi for the connection. When it works (I was looking at a pre-production sample) it's almost instantaneous, and importantly works with both Android and iPhone."

Just look at Chris Martin's video tweet of this in action here: fave.co/47kVOCh. Simply





bump your phone against your laptop and your files now automagically appear on it! It's a delightful feature that I hope makes it into more notebooks in the future, though it's an exclusive Lenovo feature in Intel's Unison app (fave.co/47p0rLC) for now.

5. MSI'S CHONKY CHATTY DESKTOP

The MSI MEG Vision X AI (fave.co/4eifb14) is a powerful desktop PC that's truly thicc—and that sports a huge built-in front panel screen for its dedicated AI-powered chatbot. Here's our description of it: "Screens hard-mounted to desktop cases aren't a new idea, but MSI is pitching this one as a dedicated 'Human Machine Interface,' which sounds like marketing speak for that giant spike that goes into the back of Neo's head in 'The Matrix.' MSI's version is decidedly less spiky, of course,

and it's really just a dedicated view for the proprietary 'MSI AI Engine,' which includes a chatbot that runs locally on the desktop.

"MSI's promotional materials don't elaborate on what exactly you'll chat with your desktop PC about, but it can 'search documents within your local folders, analyze, summarize, and respond to you based on the data in your files.' That front-mounted display can also do more old-fashioned gaming desktop things, like showing info about system performance and temperature, giving you quick access to RGB color settings, etc."

Why not simply display that information on your existing monitor? Doesn't that make more sense? Yes, indeed—but then you'd lose the ability for your PC to serve as hulking, party trick-infused centerpiece in your home. And as a wise man (fave.co/3MJvRTs) once said, anything worth doing is worth overdoing. 🔌



Lunar Lake unveiled: Intel strikes back with new laptop CPUs

Intel launches the next family of Core Ultra chips, code-named Lunar Lake, and outlines its performance advantages. **BY MARK HACHMAN**



If you're wondering why you need Intel's latest Core Ultra laptop processors, code-named Lunar Lake, the answer isn't a simple one. If you want to buy a Lunar Lake laptop, however, you'll probably understand the differences between the various chips almost immediately.

Intel unveiled the Core Ultra Series 2 at a launch event in Berlin in early September. In total, there are nine new Lunar Lake

processors, which will have begun shipping inside laptops from PC makers like Acer, Asus, HP, and Lenovo by the time you read this (they were scheduled to launch September 24).

A few months ago, Intel unveiled the guts of the new Lunar Lake architecture (fave.co/4gfDRcx), offering a sneak peek into how much performance it will offer and how much power it will consume. Today we have a better idea: Intel is promising about a 30

percent improvement in terms of gaming over last year's Meteor Lake chip, while consuming less power—with some hard numbers to back it up. That's a nice one-two punch for those people who want longer-lasting laptops without giving up too much performance.

What you'll probably appreciate most, though, is the relative return to simplicity. For the last several years, simply describing a laptop processor meant trying to explain a tangled web of cores, threads, clock speeds, caches, and GPUs—with twists and tweaks all over the place.

Instead, all of the Lunar Lake chips begin with "2" to describe them, and they all end in "V." They all contain the same number of performance cores, efficiency cores, and threads. Jumping up to a faster Lunar Lake model number means adding 200MHz or so in clock speed, with a corresponding increase in GPU performance. That's about it.

And yes, these new Core Ultra Lunar Lake chips are qualified to be called Copilot+ PCs, with NPUs cresting 45 TOPS of AI performance and above. But Intel is taking a much less breathless, more realistic approach to AI than before.

INTEL'S CORE ULTRA (SERIES 2) LUNAR LAKE PROCESSORS

Intel refused to call Meteor Lake a 14th-gen Core chip; in the same vein, Lunar Lake isn't a 15th-gen Core chip, either. Instead, both

chips are confined to the Core Ultra brand—though Intel isn't really playing up the Core Ultra Series 2 moniker, either. Intel vice president Josh Newman, the general manager of product management, told reporters that Intel will still sell Meteor Lake chips to customers, leaving both Core Ultra chips in the market for now.

The new V-series designation is a new twist, too. Robert Hallock, a vice president in Intel's Client Computing Group and general manager of AI marketing, said that the V designation was in response to customers who wanted a unique designation for Lunar Lake. You will eventually see familiar S, U, and H-series chips, on a "similar architecture, but different product," Intel executives said, probably implying there will be a version of the Arrow Lake chip that will arrive sometime this fall, too.

All of the new Lunar Lake chips contain four P-cores and four E-cores, with the same number of threads for each. They're differentiated in two ways: First, they either have 16GB or 32GB of DRAM, embedded right in the chip package themselves. Second, they have incremental improvements in CPU and GPU clock speeds, up and down the stack—just like they used to be.

Naturally, Intel isn't releasing the prices of the new Lunar Lake chips, as they're sold directly to laptop makers. But Hallock said that the overarching principle was to offer

Intel Core Ultra 200V Series Processor

Processor Number	CPU						GPU				NPU	Memory		Power	
	Core Count	Base Clock (GHz)	Boost Clock (GHz)	Cache (MB)	Thermal Design Power (W)	Max Turbo Power (W)	Architecture	Process (nm)	Transistor Count (B)	Max Turbo Power (W)		Max Turbo Power (W)	Max Turbo Power (W)	Max Turbo Power (W)	
Intel Core Ultra 7 258V	16	3.8	5.1	30	15W	47W	Intel Arc™ 140V	12	1.2	47W	32GB	32GB	32W	32W	
Intel Core Ultra 7 266V	16	3.8	5.1	30	15W	48W	Intel Arc™ 140V	12	1.2	48W	32GB	32GB	32W	32W	
Intel Core Ultra 5 228V	14	3.8	5.1	24	15W	36W	Intel Arc™ 140V	10	1.2	36W	16GB	16GB	27W	27W	
Intel Core Ultra 5 246V	14	3.8	5.1	24	15W	37W	Intel Arc™ 140V	10	1.2	37W	16GB	16GB	27W	27W	
Intel Core Ultra 3 218V	10	3.8	5.1	18	15W	24W	Intel Arc™ 140V	8	1.2	24W	8GB	8GB	17W	17W	
Intel Core Ultra 3 246V	10	3.8	5.1	18	15W	25W	Intel Arc™ 140V	8	1.2	25W	8GB	8GB	17W	17W	
Intel Core Ultra 3 256V	10	3.8	5.1	18	15W	26W	Intel Arc™ 140V	8	1.2	26W	8GB	8GB	17W	17W	
Intel Core Ultra 3 266V	10	3.8	5.1	18	15W	27W	Intel Arc™ 140V	8	1.2	27W	8GB	8GB	17W	17W	

Intel’s Core Ultra Series 2 (Lunar Lake) models numbers and features.

there was one key issue: Yes, the 14th-gen Core Ultra chips ushered in the AI PC—but without sufficient TOPS to let them be used as a Copilot+ PC (fave.co/3xQjYr5).

partners and customers as close to the full capabilities of the Lunar Lake architecture to every customer, and let the price of the end product dictate the performance that customer will buy. That might sound somewhat obvious—but again, it hasn’t always been this way, especially recently.

Some of the slower Lunar Lake processors dip below 45 TOPS, which has been the informal dividing line between what is a Copilot+ PC and what isn’t. Intel is still tweaking the NPU by adjusting the frequency and the number of NPU units, producing the Core Ultra 7 258V (47 TOPS) and the Core Ultra 7 266V (48 TOPS). It just won’t tell us what it’s doing. (I asked.)

Intel’s prior Core Ultra processor, Meteor Lake, shipped on December 14, 2023 (fave.co/3U1YPmm), after Intel discussed the Meteor Lake architecture (fave.co/3PUqbHl) and announced its clock speeds and model names, too. But

INSIDE INTEL’S NEWEST CORE ULTRA, LUNAR LAKE

Intel’s Lunar Lake chip changes in a few significant ways from its earlier chips. (For those of you who have been following our earlier coverage and wish to jump ahead to how performance differs, please do so. Otherwise, this section will recap some of the key features of the Lunar Lake architecture, using more details of the Xe2 GPU as a transition into performance.)

As referenced above, the key adjustment from a laptop perspective is Intel’s decision to build in the system DRAM inside the chip package itself. We’ve become used to PCs shipping with RAM slots, which can be upgraded with more memory over time. Laptops also include this feature—but fewer are internally accessible, and some laptops come with memory soldered to the motherboard itself. Intel is betting that those of you buying productivity laptops with Lunar

Lake chips inside won't care about upgrading the memory, and that either 16GB or 32GB will be sufficient.

Otherwise, Intel has continued down the path of aggressively reducing power. While Meteor Lake introduced efficiency (E-cores) and low-power E-cores, Lunar Lake's E-cores are simply all E-cores, if that makes sense. Lunar Lake's E-core performance is basically double that of Meteor Lake, Intel executives have said. And, given that there are four E-cores in Lunar Lake, versus two low-power E-cores in Meteor Lake, you might say (as Intel does) that multithreaded E-core performance has almost quadrupled in a generation's time.

And then there's one of the more higher-profile changes: no more hyperthreading. For decades now, Intel's Core chips have been able to run two threads per processor core, increasing performance. But Intel has said

eliminating the SMT feature helps Intel optimize for performance per watt and performance per area—and that's the overarching mantra for Lunar Lake.

AI, of course, is one of the key thrusts for Intel and its competitors. How important it is poses an interesting question, especially because AI encompasses both AI processing in the cloud (such as Google Gemini, or Microsoft Copilot) and the on-chip AI processing that chipmakers love to talk about.

How much the onboard NPU will be used isn't really clear. But what Intel's marketing team cares most about is that the NPU4 core now produces up to 48 TOPS, meaning that laptop makers can now add a Copilot+ sticker (and its related Windows features, fave.co/4f3NQkw) to Lunar Lake laptops.

Finally, Lunar Lake has added what Intel calls the Xe2 GPU, the long-awaited variant that should show up in the upcoming discrete



Intel's estimates of its Media Engine performance.

Battlemage graphics cards for desktops. Our earlier story goes into more detail about the actual architecture of the Xe2 GPU, including the updated ray-tracing unit, the eight 512-bit vector engines and the eight 2,048-bit Xe Matrix Extension engines.

What's new here is what Intel wouldn't tell us before, including the clock speeds and memory. The Lunar Lake product matrix reveals that you'll be able to choose from an Xe2 GPU with either 7 or 8 Xe2 cores, with clock speeds ranging from 1.85GHz to 2.05GHz. While it's not a perfect metric, TOPS is also helpful to understand the range of GPU performance. The slowest Ultra 5 226V chip produces 53 TOPS between its CPU/GPU/NPU, while the fastest Core Ultra 9 288V produces 67 TOPS.

HOW FAST IS LUNAR LAKE? HERE'S WHAT INTEL SAYS

So how fast is Intel's Lunar Lake chip? That might not be the right question. Qualcomm has been earning praise for its



Intel claims substantial gains in both battery life and performance versus Meteor Lake.

power-sipping Snapdragon chips. AMD's mobile Ryzens have aimed mainly at performance. And Intel? It's trying to cut power without giving up its strong legacy of processing performance.

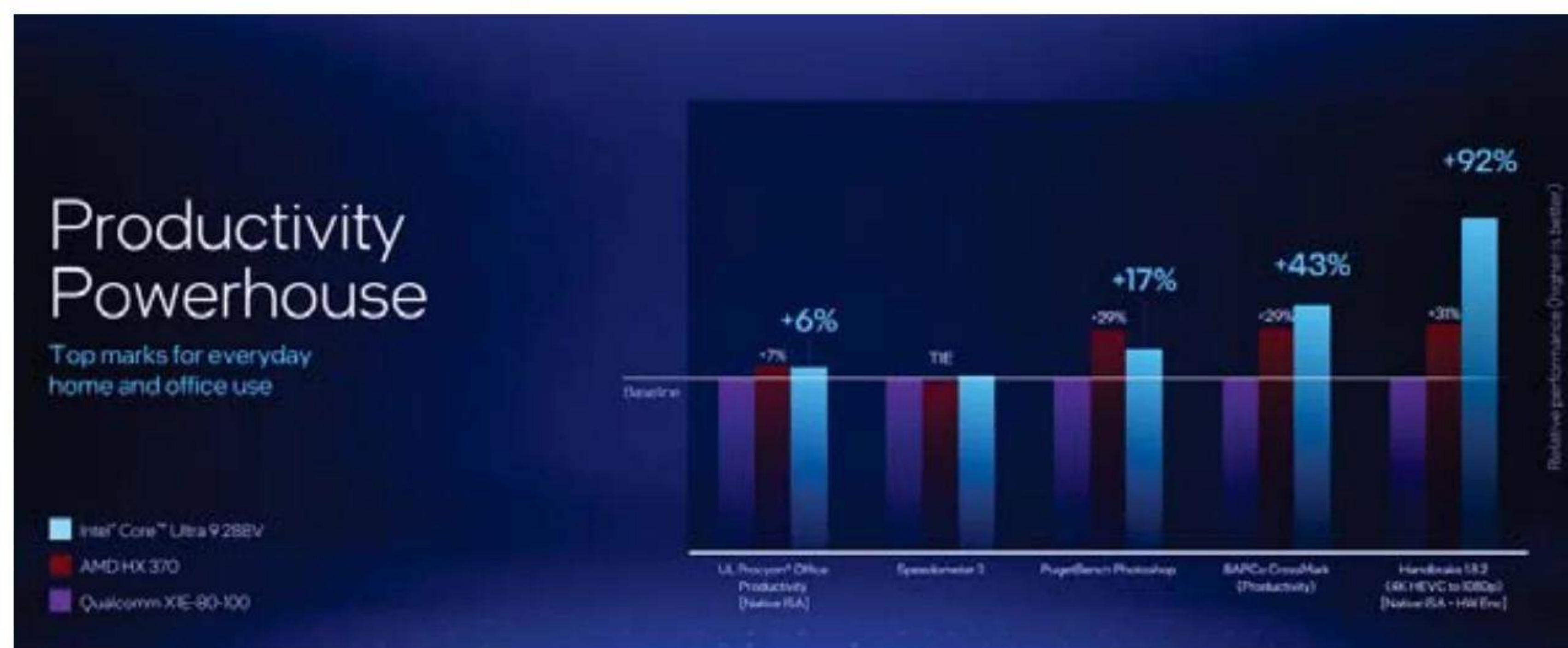
"I'm sure I sound a bit like a broken record, but Lunar Lake is all about energy efficiency," Hallock said. Lunar Lake was conceived as a 9W CPU, but "OEMs wanted more," he said. So Intel pushed higher, pushing the total TDP options up to 35W.

Intel cut the Lunar Lake package power by 30 percent, but made each thread much more efficient—each processor thread in

Lunar Lake is two to three times more powerful than Meteor Lake. Put another way, Intel believes that the Core Ultra 9 288V cuts power by 34 to 50 percent versus the Intel Core Ultra 7 165H (Meteor Lake) in terms of web browsing and productivity apps; in games, it cuts power by 11 to 35 percent, while performance soars to 68 percent.

Intel also believes that it is far more efficient than Qualcomm's Snapdragon X Elite, too. Lunar Lake delivers comparable performance to the Snapdragon X Elite at 40 percent lower power, with four fewer cores, Hallock claimed.

Intel clearly feels that it has the goods to lead in terms of power and battery life, and it leaned on the benchmarks to prove it—the company showed off many more benchmarks than I could fit in this article.



Intel believes that it can beat Qualcomm and AMD on both performance *and* battery life.

We've included a representative sample here, however.

Intel said that it worked with an unnamed PC laptop maker, who plans to release the same laptop using both a Snapdragon X Elite as well as a Core Ultra variant, with the only differences coming in the motherboard and processor. That's proof, executives said, that the Core Ultra can top the Snapdragon in a head-to-head test.

In that example, the notebook with the Intel Core Ultra 7 268V outlasted the same notebook with the Qualcomm X1E-80-100 inside it, 20.1

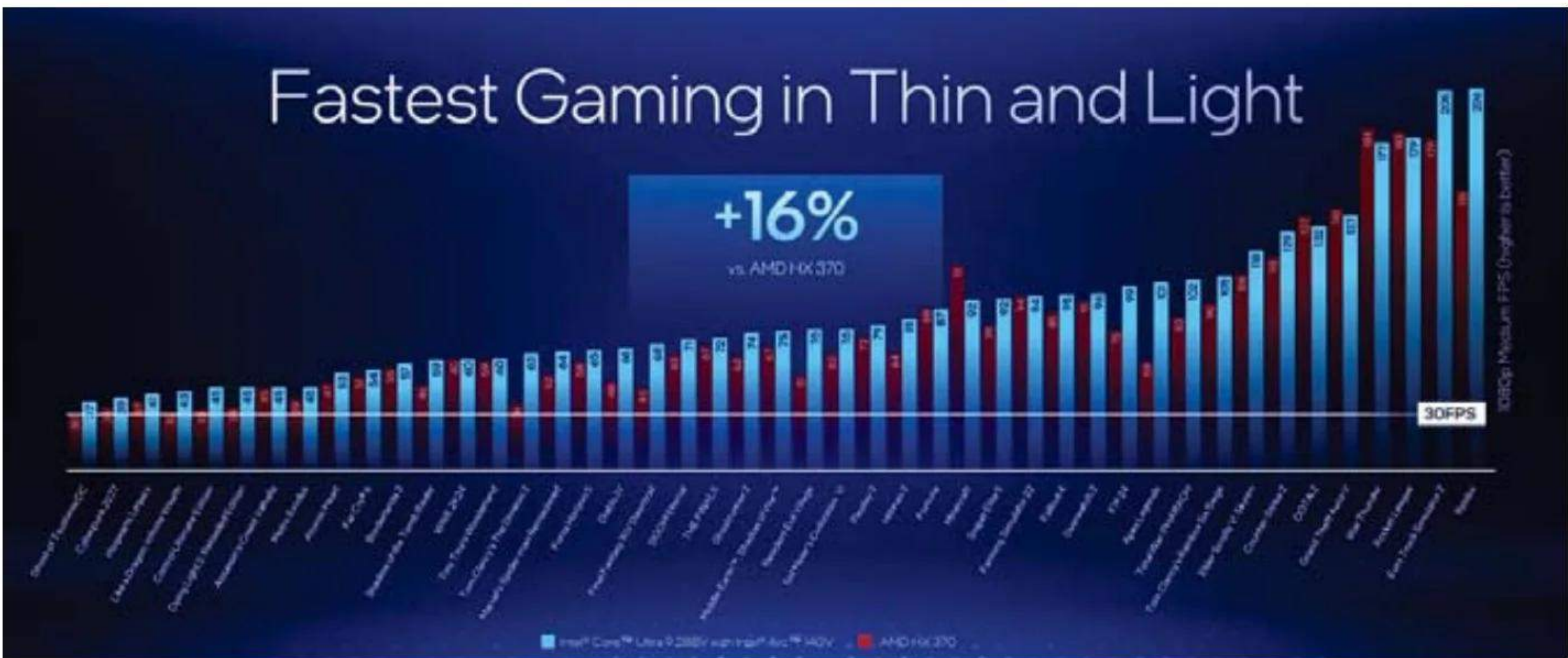
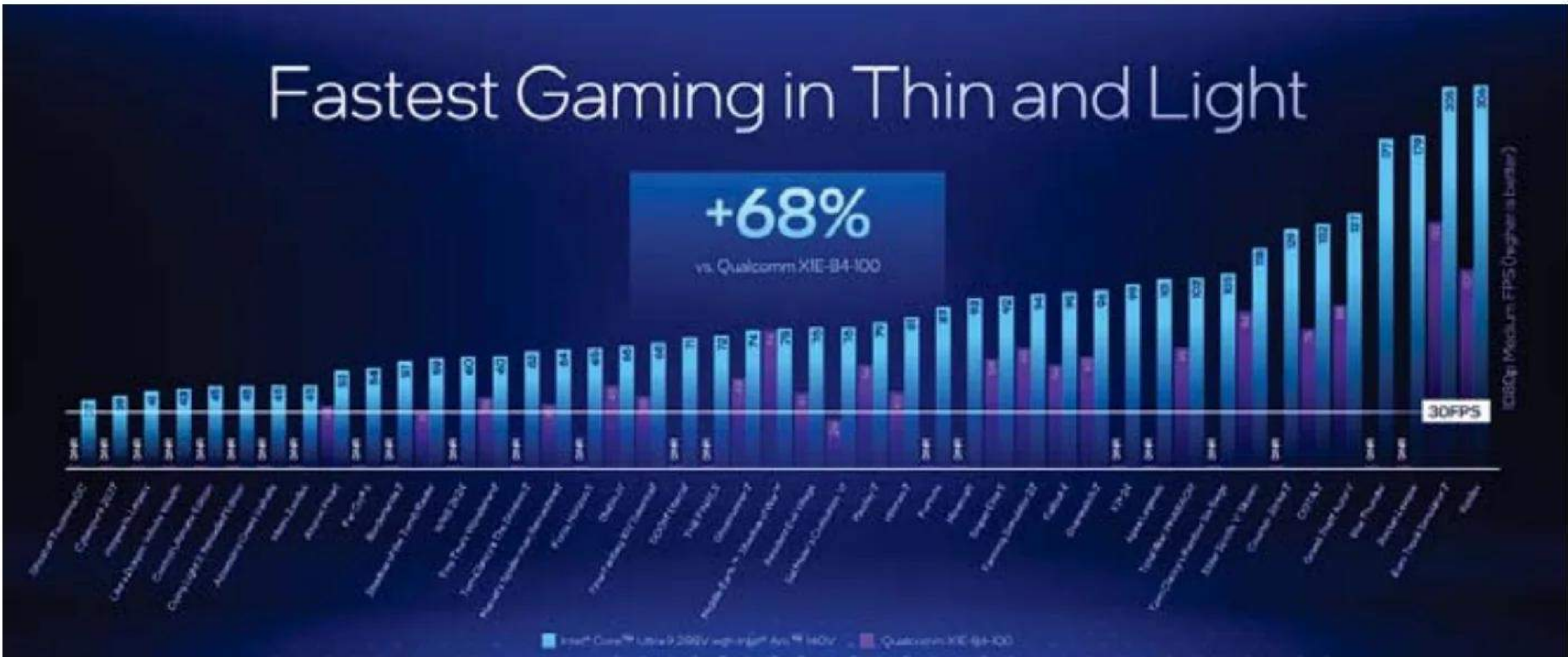
hours to 18.1 hours, running the PCMark Procyon Office test. (Qualcomm emerged victorious over the course of a marathon Teams call, 12.7 hours versus 10.7 hours.) In the graphic above, the PC maker shipped a Ryzen notebook, too, but only in a larger size.

Intel’s Core Ultra didn’t run ragged over Qualcomm’s Snapdragon X Elite in terms of AI, generating a score of 1,828 in the UL Procyon AI benchmark, very close to the score of 1,792 Qualcomm originally produced last year ([fave.co/ 4cX88uH](https://fave.co/4cX88uH)). Intel’s belief is that more and more software

developers will try to use the different parts of a mobile SOC—the CPU, GPU, and NPU—in a combined effort. That future isn’t here yet, either, though.

However, Intel did use specialized AI benchmarks, such as those found in Adobe Premiere and Lightroom, to indicate that it was leading in AI, too. In Lightroom, for example, Intel claimed that its Ultra 9 288V could outperform the Qualcomm X1E-78-100 by 145 percent in AI denoising.

Intel also ran several live demos, in which games like *DOTA 2* were looped on



Intel’s Lunar Lake (Core Ultra Series 2) versus the Snapdragon X Elite and AMD’s mobile Ryzen chips.

comparable machines to show off how well Lunar Lake performed. Intel executives also pushed the button to launch several demos on their own captive hardware. In live demos (at 1080p, Medium settings, with XeSS enabled), Lunar Lake laptops hit playable 60ish and 70ish frame rates in *Cyberpunk: 2077* and *Shadow of the Tomb Raider*. We have to take every benchmark that we didn't run ourselves with a grain of salt, though they're more convincing than just a PowerPoint slide.

To be fair, Intel's handpicked benchmarks are...handpicked. And Qualcomm clearly has Intel nervous, as company executives zeroed in on its competitor to the south. Intel, of course, has programs like Intel Evo, the co-engineering program with PC makers that it says it will continue and expand to improve cool and quiet testing.

Intel still faces thousands of potential layoffs as well as cost cuts. Intel sources I spoke to said those decisions haven't been made yet. Carla Rodriguez, an Intel vice president responsible for ecosystem enablement, said that Intel has no plans to cut its co-engineering and marketing programs. Intel also reiterated that Lunar Lake isn't subject to the "Vmin" voltage issue that affected its desktop processors.

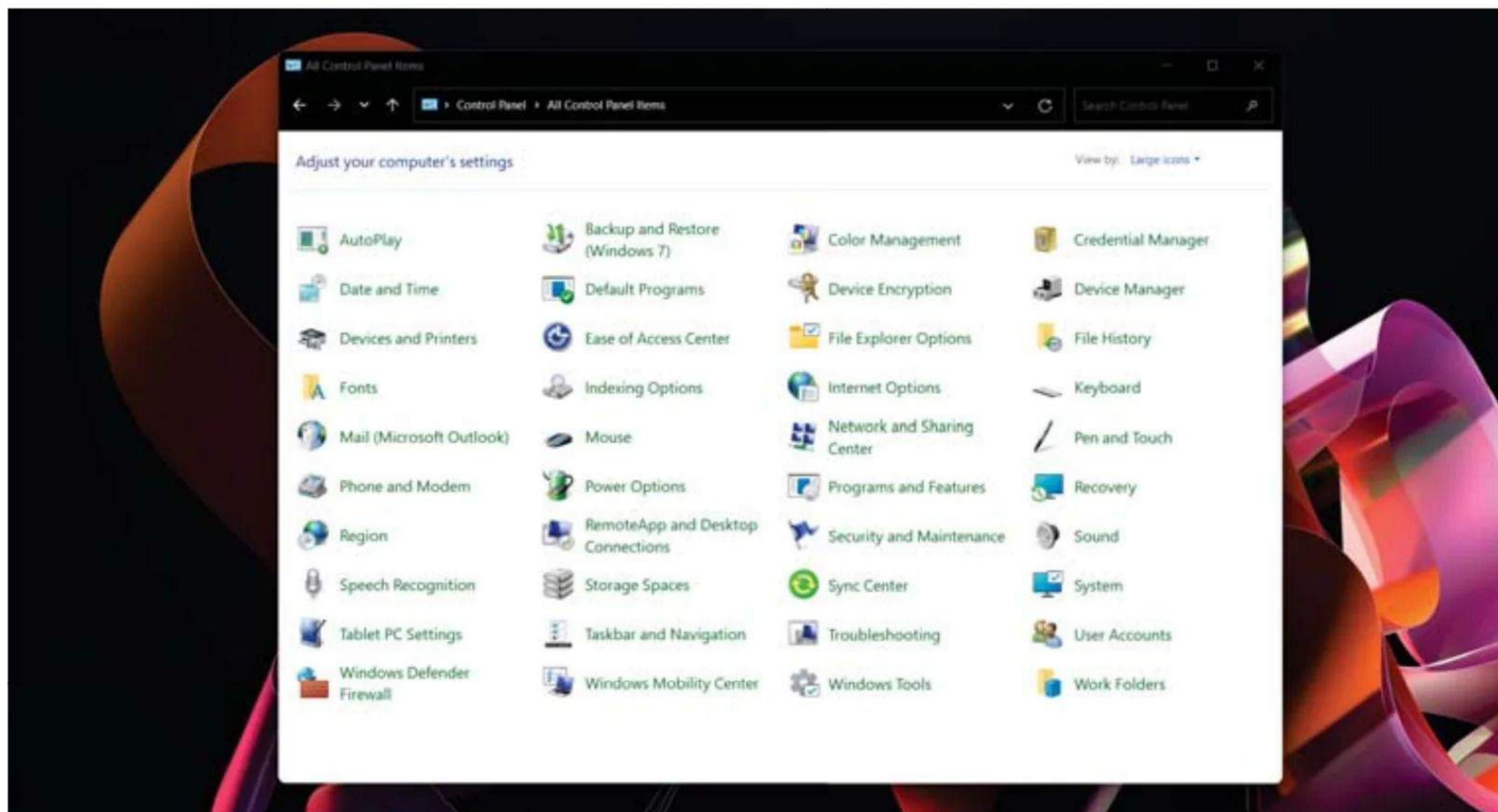
Intel does have advantages: its dominant position and its breakneck pace. Intel will ship both Lunar Lake and Meteor Lake in the time its rivals have shipped one architecture. Whether Intel can live up to its claims, though, will be put to the test as soon as we can test the Core Ultra Series 2 (Lunar Lake) for ourselves.

Correction: Microsoft has defined the AI requirement to qualify as a Copilot+ PC as 40 TOPS, not 45 as the story originally stated.



Intel ran several live demos, in which games like DOTA 2 were looped on comparable machines to show off how well Lunar Lake performed.

This would qualify all of the new Core Ultra Series 2 chips. PCWorld attended IFA at the request of Qualcomm, which paid for hotel and travel. The company did not influence PCWorld's editorial content. 🔌



Windows will have to pry Control Panel from my cold, dead hands

Until there's an actual better solution, I refuse to give it up. **BY ALAIN YEE**

When Windows 10 launched, its new Settings app was slated to eventually take over for the Windows Control Panel—and yet that conglomeration of settings is still very much alive and kicking. Talk of its impending demise has never gone away, though, with new chatter surfacing recently (fave.co/4cY68Bq).

Most Windows users probably are fine with that move. I am not. Sure, the Windows Control Panel looks like a relic. It gets less use

than its successor. And its layout isn't always the fastest to navigate. But the Settings app is an imperfect replacement.

For starters, it's missing the full range of settings available in the Control Panel. (That's a failure on Microsoft's part, and one that's lasted for almost 10 years at this point.) The interface isn't always the easiest to quickly skim through, either. Windows 11 particularly makes this more difficult, with rows upon undistinguishable rows of options. For my eyes and brain, it's harder to scan through and quickly find what I want.

If I sound like a curmudgeon (let it never be said I don't know my own faults), it's for good reason. Sometimes you just want to dig into the guts of an operating system quickly. In the old days, you didn't have to click deep into menus, looking for what you wanted. Now you have to lean much more on search. It's not unlike the difference between classic cars and today's computerized vehicles—I like being able to get in there and tinker, rather than having to take stabs in the dark at the less tangible parts of an issue.

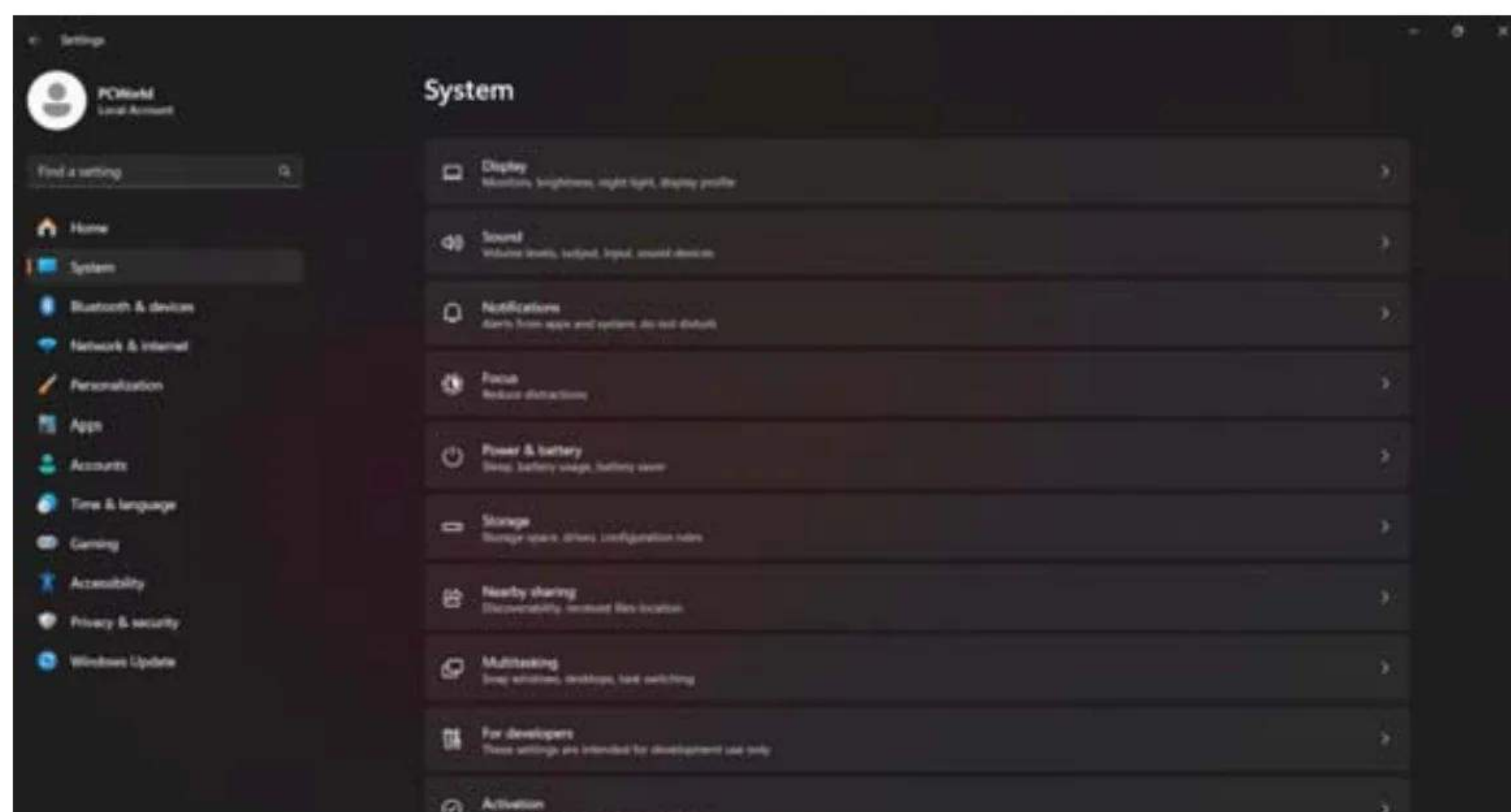
That said, I don't believe the Control Panel is inherently better than the Settings app. It still has its quirks. Bouncing between two apps to quickly access what I want is also a pain. Rather, my antiquated preferences are a product of frustration—I want an app that lets me bend and shape Windows to my needs. The attempt to simplify the Control Panel and rebirth it as the Settings app is an

understandable attempt at increased user friendliness, but only to a point. Heck, Windows 11's Settings app doesn't even feel as simplified and user friendly as the Windows 10 version—and it still doesn't house everything.

I've long proposed a tiered system of settings access. As an eternal fan of Windows 2000, where all settings and administrative tools could be immediately jumped into, I'd love to see increasingly granular controls for simple, average, and power users. Make simple the default, and then let those of us who like to poke around choose between average and power.

Consolidation of settings is something that I want—but it needs to have comprehensiveness, too. That may still be a long time coming, as my colleague Michael Crider points out in his write-up about the Control Panel's possibly numbered days. If

history's any indication, the Control Panel may still be kicking around for years to come. Merging legacy systems with fresh ones can be a real bear. Not like I know anything about that, complaining as often as I do about new processes that aren't as efficient (fave.co/3lhGcnE) as the old ones. 🔌



Some people don't have trouble quickly scanning rows that all look the same, but I do.

Apple's practical, dull AI is a stark contrast to Windows Copilot

Apple's Apple Intelligence uses AI as a productivity tool, and not as an assist for creatives. Why? **BY MARK HACHMAN**



The new Apple Intelligence within the new Apple iPhone 16 provides a surprisingly practical approach to AI. It's straightforward, helpful, and well, boring—a stark contrast to Microsoft's Copilot+ PCs (fave.co/3za4DSf), which position themselves as the cusp of a revolutionary new era of computing (fave.co/4f3NQkw), complete with a mandatory new keyboard button (fave.co/49QnG1u).

Apple, which touts itself as the foundation for creative work, could have used AI to allow creatives to generate “photos” of imaginary objects, as Google's Pixel now does. It could

have used AI, either running locally on in the cloud, to produce AI-generated art, or AI-produced facsimiles of celebrity voices. It did none of that.

Instead, the Apple iPhone 16 uses AI as a productivity tool, first and foremost, with a focus on supercharging existing features with machine smarts.

Apple is revamping Siri with a new AI foundation to help it better understand what you yourself are looking for, as well as follow complex conversations. AI organizes your photos into albums of your favorite people. Visual intelligence will summon information

about objects you're looking at. Apple Intelligence will create summaries of your meetings—and in a very quick, blink-and-you'll-miss-it feature, it even uses a “semantic index” to surface information you're looking for and forgot about, which is its own version of the controversial Windows Recall feature (fave.co/4eXeCLf).

In fact, Microsoft and Apple seemed to have swapped places. While Microsoft splashes generative AI art inside Photos (fave.co/3tr7e7v) and Paint, Apple presented the ability to rewrite an email as something special!

Apple took such a conservative approach to AI that it barely implemented it all as part of photo or video creation. Yes, you'll see it in features like live previews of various camera filters, but the only feature I'd associate with traditional AI art was the ability to use generative AI to create your own “genmoji,” or custom emoji. Really, using a prompt to find specific photos and combine them together into a “movie,” or to search your albums for a specific scene that you describe, feels like features that have been in various operating systems and apps for years... because they have been!

Honestly, I kept waiting for more: maybe the ability to capture the scene of a dancer, say, and then to use AI to remove the dancer and insert her into another video. Yes, Apple showed off the ability to highlight and then remove an object from a photo. But we've seen that before, too.

It all felt very muted, and that's probably not surprising. If Apple had pushed all of its chips in on generative AI as a feature, rather than a tool to enhance other features, it would have risked angering and alienating the cadre of creatives that traditionally turn to Apple and its iPhones. What Apple seemed to imply is that it doesn't plan to use iOS or the iPhone to promote generative AI itself. Instead, its A18 silicon will instead be the foundation of AI, which app developers can write to. If a developer wants to build AI into its app, and if that user wishes to buy and download that app, that's fine—Apple's hands are clean.

Craig Federighi, Apple's senior vice president of software engineering, said that there are “multiple generative models on the iPhone in your pocket.” There most certainly are, and they're doing all sorts of things. But Apple seems determined to let those features speak for themselves, without using “AI” in every other sentence.

Apple, then, is walking a fine line: AI as a productivity solution and a helpful tool that makes existing more powerful is A-OK; AI as a creative aid feels more controversial. Apple even downplayed Siri's newfound AI powers. All that leaves an opening to rivals like Microsoft and Google to keep pushing their own AI capabilities. Remember, Apple leans heavily on preserving privacy. Apple appears to be betting that consumers are as distrustful of AI as they are of tech giants slurping up their data, and acting accordingly. 🔌



You need to replace Kaspersky's antivirus ASAP—try one of these alternatives

Switch to an app with regular antivirus updates. **BY ALAINA YEE**

Time has run out—Kaspersky antivirus finished its U.S. shutdown (fave.co/3Tp3yxn) in September. In June, the Russia-based company was classified as a risk to national security, resulting in a ban on operations inside the U.S. and on any hardware owned by U.S. residents.

If you're still using Kaspersky, you'll need to remove the app from your PC (fave.co/4cYeaKA) and switch to replacement

software that will continue to get regular updates. For free users, the simple choice is to fall back to Windows Defender, while paid users get an automatic rollover to rival company Pangos' UltraAV software (fave.co/4d2e9FA) at no cost.

But should Windows Defender lack features—or UltraAV's lower prominence cause concern—and you want a closer replacement for Kaspersky and its features, you can try one of the options below.

BEST AV REPLACEMENT FOR KASPERSKY STANDARD PLAN

AVG Internet Security

AVG Internet Security (fave.co/3PdHNfV) gets top marks from reviewers (including PCWorld) and for good reason. It offers top-ranked defense against malware, as well as email, network, and web threats. It also provides features that Kaspersky's Standard Plan doesn't, like dark web monitoring, safeguards against webcam takeovers, and sensitive data protection.

AVG's only real drawback is the number of devices covered by its plans—you can only choose between support for one device (\$47 for the first year, \$78 thereafter) or ten devices (\$60 for the first year or \$100 thereafter). So you could end up paying more than for Kaspersky's three-device plan, though that can be avoided by purchasing licenses

through authorized third-party retailers (fave.co/43mDUwY).

Overall, AVG Internet Security is reliable antivirus software with a user-friendly interface and minimal impact on system resources. It gives deeper control and more expansive protection than Windows Defender while not overly stuffing features into the app that inflate the yearly subscription price.

BEST AV REPLACEMENT FOR KASPERSKY PLUS PLAN OR KASPERSKY PREMIUM PLAN

Norton 360 Deluxe

Norton 360 Deluxe (fave.co/30Bk59o) has consistently held the top spot in our picks for the best antivirus software (fave.co/3CnDHuk), and for good reason—the app offers solid, broad protection at an affordable price. You can expect similar features to

Kaspersky's top-tier Premium Plan, but at a lower cost.

For antivirus performance, Norton offers strong online protection, with minimal impact on system resources for average users. You also get PC utilities that include the ability to monitor for outdated hardware, 50GB of cloud backup storage, dark web and privacy monitoring, webcam safeguards, and phishing protections. An unlimited VPN, password



AVG Internet Security gives deeper control and more expansive protection than Windows Defender.

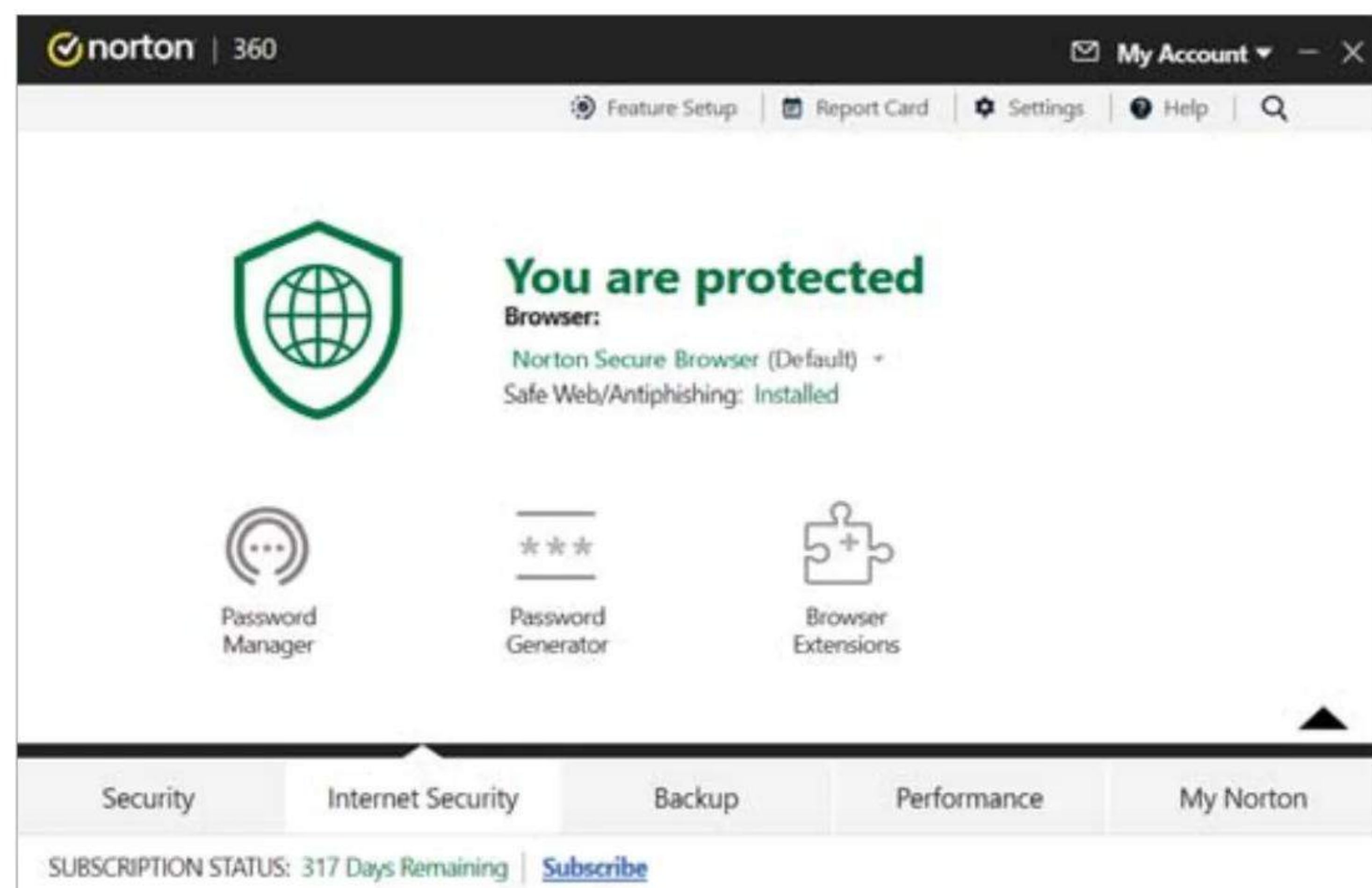
manager, and parental controls are also part of the subscription, with controls that are simple to navigate.

Norton's lone quirk is an app containing two different user interfaces, which can slow you down when looking for settings or features. But that minor drawback is easily forgiven given the plan's pricing and overall value. You'll pay just \$50 during the first year for 5 devices and \$120 per year thereafter—and sometimes you can get it even cheaper through third-party retailers (fave.co/4gmutni).

MORE AV REPLACEMENT OPTIONS FOR KASPERSKY

Looking for yet other alternatives like software specifically geared toward beginners or ones packed with other helpful utilities for your PC? You can also consider the options below.

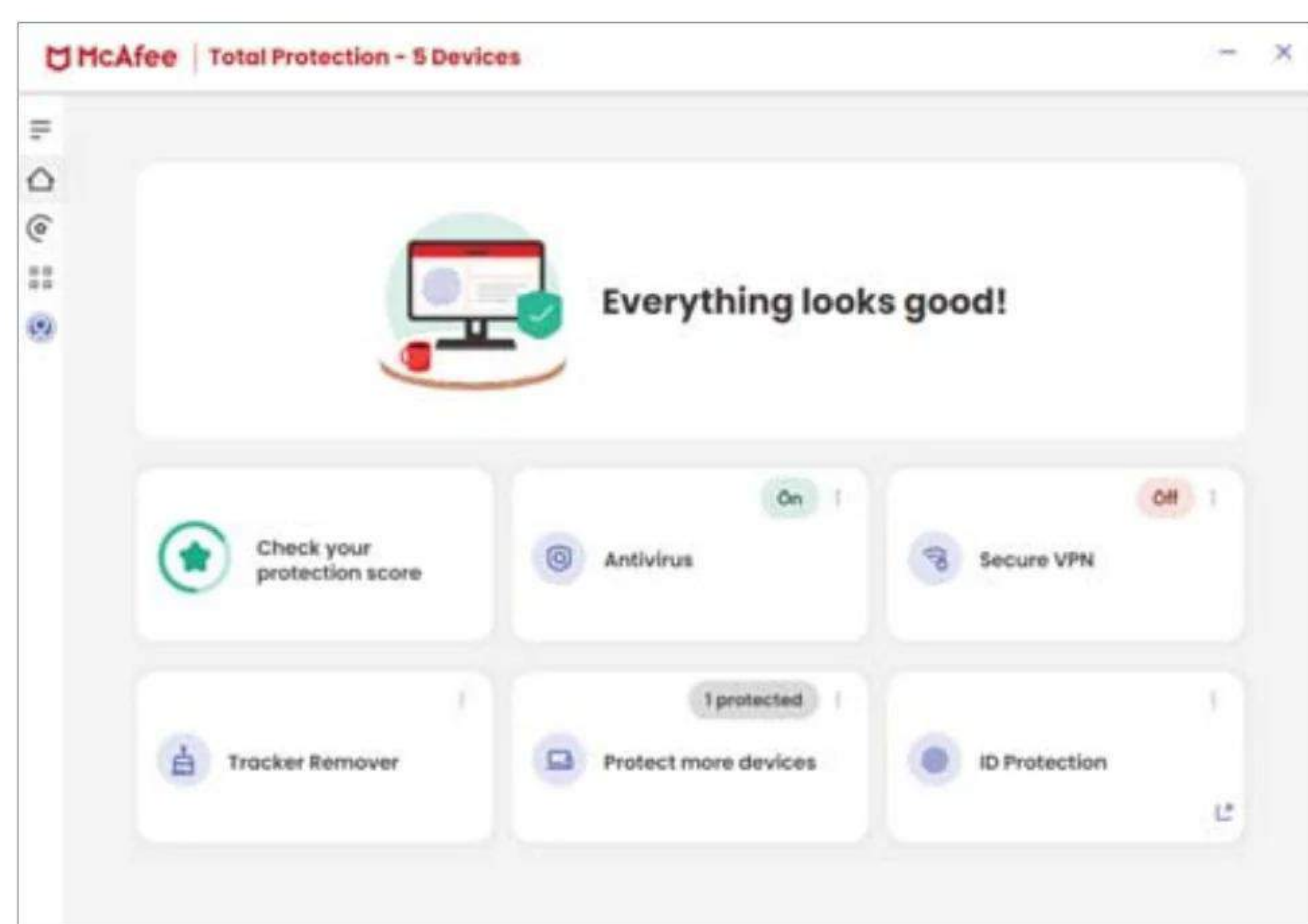
For a full rundown (and yet more suggestions), check out our top picks for antivirus in our roundup (fave.co/3CnDHuk), as well as our breakdown of the best free antivirus software (fave.co/3Pxg4c7).



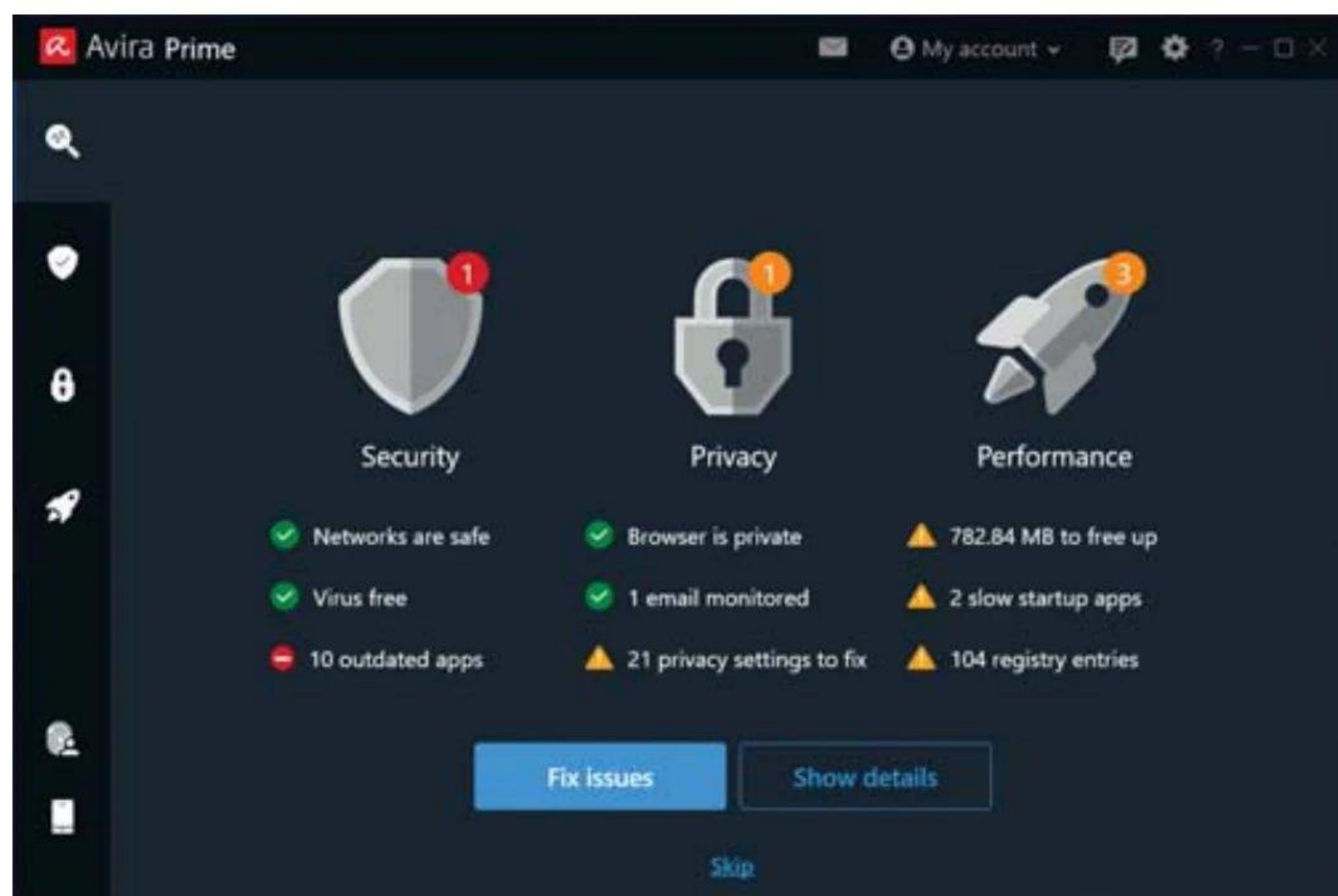
Norton 360 Deluxe offers solid protection at an affordable price.

Best for privacy: McAfee Total Protection

These days, online threats extend beyond just malware. McAfee's Total Protection (fave.co/3TrldDt) suite focuses as much on identity and privacy issues as it does on ransomware



McAfee Total Protection's strengths lie in its defenses against malware, network, and other online threats.



Avira Prime is one of the better newbie-friendly antivirus suites we've seen, especially with its strong online protection.

and phishing sites. This particular plan includes dark web scanning for personal information (email address, phone number, Social Security number, passport, driver's license, date of birth, credit card, user names, and more), and also helps with password changes for online accounts when applicable.

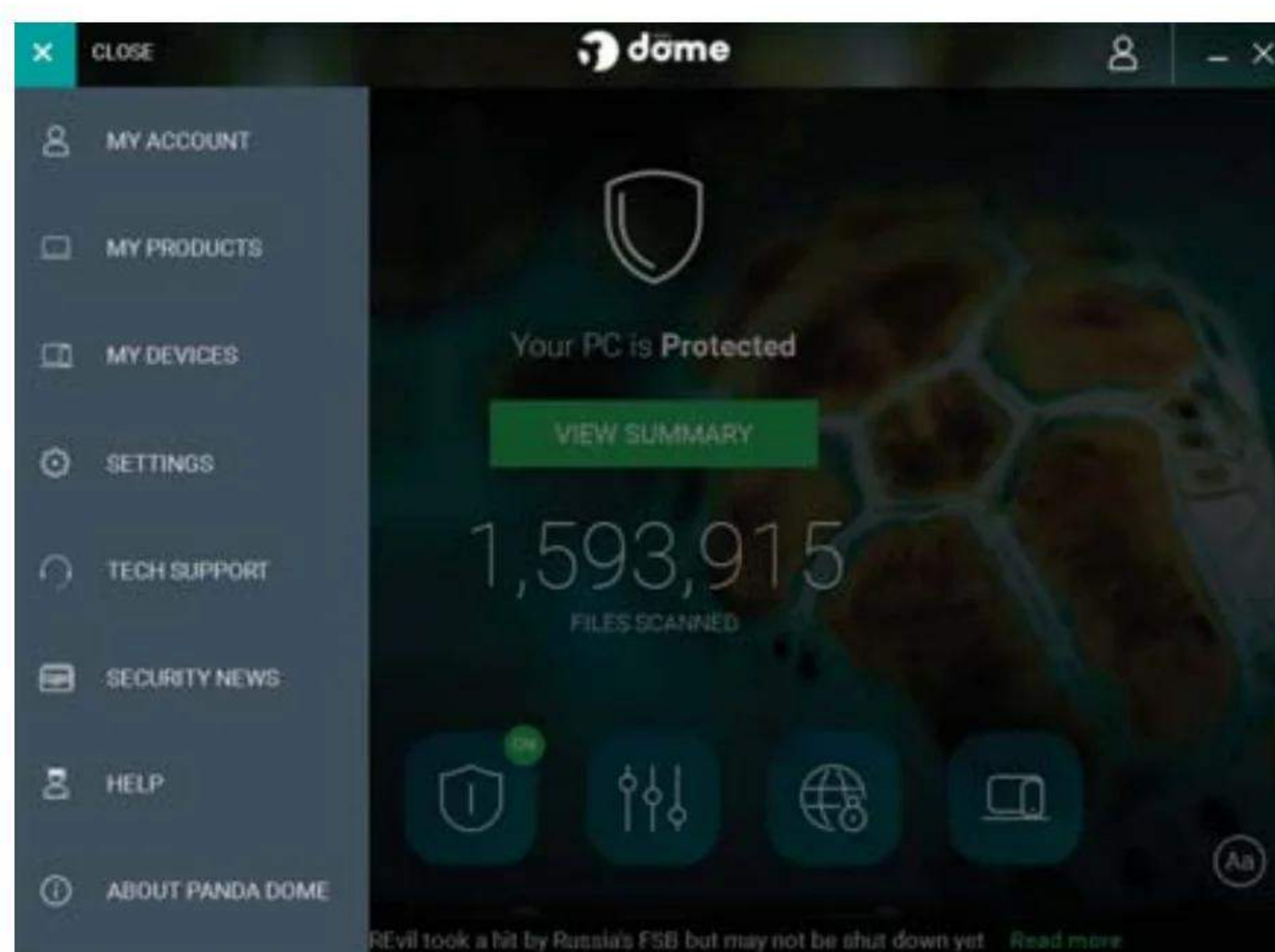
Best for beginners: Avira Prime

If you need more help with managing your PC, Avira Prime (fave.co/3TpvckY) unifies strong online protection with services like a password manager and unlimited VPN in a clean, attractive interface. It also includes a load of PC utilities that (among other things) can keep apps up to date, securely delete files, and back up data.

Most feature-rich: Panda Dome Complete

This suite offers a ton of utilities, including a virtual keyboard to thwart keylogging malware, advanced virus removal, an update manager for Windows apps, and a startup apps manager. A password manager, parental controls, and limited-bandwidth VPN are also part of the app. And despite squeezing

in so many features, Panda Dome Complete (fave.co/3ZkY5v8) has one of the most minimal impacts on system performance we've seen. In fact, it's so minor that no real difference exists. 🔌



Panda Dome Complete has an absolute ton of features nicely organized in a simple, mobile-like interface.

Microsoft adding long-awaited features to Outlook for Windows

A collection of new features and improvements is coming to the new Outlook app this year. **BY MIKAEL MARKANDER**



In 2023, Microsoft announced that the Mail, Calendar, and People apps on Windows were officially coming to an end and would be replaced by Outlook for Windows. Those apps are still available on the Microsoft Store, but only until December 31, 2024. From then on, we'll only have Outlook for Windows—and up until now, that's been a sore point for many users who have criticized the newer app's lack of many features from the older apps.

But it seems as if Microsoft has listened and taken the criticism to heart. According to

Windows Latest (fave.co/3z6csZP), you can expect to see around 30 new features added to the Outlook app later this year.

The new features will include support for PST files, better control over email retention lengths, and the ability to pin important folders to the top of the app. If you're interested in AI assistance, Copilot will be able to help you rewrite portions of your email before sending it off.

A list of all upcoming changes to Outlook for Windows can be found on the official Microsoft 365 site (fave.co/4dZpRBV). 



Cheaper Snapdragon X Plus chip aims for long-lasting \$700 laptops

The questions the new 8-core Snapdragon X Plus need to answer include—is it good enough for the price? **BY MARK HACHMAN**

Qualcomm launched a pair of 8-core variants of the Snapdragon X Plus Wednesday at the IFA show in Berlin in early September, expanding the reach of Windows on Arm products into what it says will be the \$700 to \$900 range.

The Snapdragon X Plus 8-core chips, as they're known, are also referred to by their

cryptic product numbers, the X1P-46-100 and X1P-42-100. They sit at the bottom of Qualcomm's hierarchy of Snapdragon X Elite processors (fave.co/40topBX), just under the 10-core Snapdragon X Plus chips (fave.co/462FGoo) that launched earlier this year, with a far smaller amount of cache memory.

Qualcomm chief executive Cristiano Amon launched the new chips at a press



Qualcomm CEO Cristiano Amon launched the new chips at a press conference in advance of the IFA show in Berlin.

“Plus” variants and slower Snapdragon 7-series chips. All were designed to address separate segments of the market, allowing Qualcomm and its customers to expand the Snapdragon’s reach. In this case, Qualcomm believes that they’ll enable laptops and/or tablets to hit the \$700 price point its competitors can’t touch.

All told, Qualcomm now sells a total of eight Snapdragon X chips, though

conference in advance of the IFA show. “We have been on this journey to bring personal communication to personal computing systems,” he said. “And we have arrived.”

Qualcomm is employing a familiar strategy, moving up and down the product stack with various tweaks to the clock speed, core count, and cache size. Qualcomm’s older Snapdragon 8-series chips for the PC included a number of different variants—including the Snapdragon 8 Gen 2 (fave.co/3K0wKXk), for example—together with

the Snapdragon X Elite X1E-00-1DE at the top of the product stack has so far been reserved for a developer kit that isn’t available to consumers. One key feature: Qualcomm has left the AI TOPS capability unchanged at 45 TOPS.



A summary of the new Snapdragon X Plus 8 Core’s capabilities.

QUALCOMM SNAPDRAGON X ELITE, X PLUS PRODUCT BREAKDOWN 8-CORE

SNAPDRAGON X SERIES PLATFORMS		QUALCOMM ORYON CPU				
Platform	Port Number	Cores	Total Cache	Maximum Multi-Core Frequency	Boost Frequency	
Snapdragon X Elite	XIE-00-1DE	12	42 MB	3.8 GHz	4.3 GHz (Dual-Core)	
Snapdragon X Elite	XIE-84-100	12	42 MB	3.8 GHz	4.2 GHz (Dual-Core)	
Snapdragon X Elite	XIE-80-100	12	42 MB	3.4 GHz	4.0 GHz (Dual-Core)	
Snapdragon X Elite	XIE-78-100	12	42 MB	3.4 GHz	None	
Snapdragon X Plus	XIP-66-100	10	42 MB	3.4 GHz	4.0 GHz (Single-Core)	
Snapdragon X Plus	XIP-64-100	10	42 MB	3.4 GHz	None	
Snapdragon X Plus	XIP-46-100	8	30 MB	3.4 GHz	4.0 GHz (Single-Core)	
Snapdragon X Plus	XIP-42-100	8	30 MB	3.2 GHz	3.4 GHz (Single-Core)	

The two new Snapdragon X Plus chips sit at the bottom of Qualcomm’s product stack.

It’s fair to say that Qualcomm and its Snapdragon X Elite have considerably redefined the PC market. For the last two generations, rival Intel has pushed hard to lower the power consumption of its Meteor Lake and Lunar Lake Core chips, with on-chip controls that try to minimize power first and foremost. By contrast, Qualcomm bought Nuvia in part to bolster the performance of its Arm chips with an Oryon CPU core that can keep up with Intel’s best. In part, that’s due to an aggressive performance curve where Snapdragon chips now run at their fastest to try to outperform their rivals, using the native Arm architecture to keep power low.

Numerous PC makers have signed on to use the Snapdragon X family, including Microsoft with its Surface Pro and Surface Laptop, plus laptops from Acer, Asus, and others. Honor even entered the PC market

specifically to use Qualcomm’s chip, and several PC makers are expected to use the new X Plus 8-Core chip as well.

The Snapdragon X Plus 10-core chip, the X1P-64-100, is slightly unusual in that it lacks a turbo, or CPU boost. Both of the new 8-core Plus chips do, however, with the X1P-46-100 boosting to 3.4GHz and the X1P-42-100 boosting to 3.2 GHz. Like the other Plus chips, however, they only boost a single core at a time.

Qualcomm cut down the new 8-core Plus chip’s cache size to just 30MB, versus the 42MB that graces each and every Snapdragon X chip Qualcomm makes. The number of TFLOPs available to the Adreno GPU also fell dramatically, to 2.1 and 1.7. That seems to have reduced the video capabilities: The chips can only encode video at 4K30 and decode at 4K30 (10-bit) or 4K60 (8-bit). A

	QUALCOMM ADRENO GPU		QUALCOMM HEXAGON NPU	MEMORY	
	Port Number	TFLOPS	TOPS	Type	Transfer Rate
	XI-85	4.6	45	LPDDR5x	8448 MT/s
	XI-85	4.6	45	LPDDR5x	8448 MT/s
	XI-85	3.8	45	LPDDR5x	8448 MT/s
	XI-85	3.8	45	LPDDR5x	8448 MT/s
	XI-85	3.8	45	LPDDR5x	8448 MT/s
	XI-85	3.8	45	LPDDR5x	8448 MT/s
	XI-45	2.1	45	LPDDR5x	8448 MT/s
	XI-45	1.7	45	LPDDR5x	8448 MT/s

Snapdragon X Elite can encode at 4K60 and decode at 4K120, with the same codecs as the X Plus. The ability to concurrently decode and encode video is also restricted to 1080p on the new X Plus, versus 4K capabilities in the X Elite. The X Plus chip can also capture video at just 36Mpixels, versus 64Mpixels for the X Elite.

Aside from that, the 8-core Snapdragon Plus chip offers few surprises. It maintains the 45 NPU TOPS that qualifies the Snapdragon X chips to be called Copilot+ PCs, and uses the same LPDDR5x memory and 8,448 megatransfer memory transfer rate of the other chips. It also includes the same Snapdragon X65 modem, Wi-Fi 7, and

Bluetooth 5.4 that the Snapdragon X Elite uses, too.

Qualcomm’s Amon also tipped a couple of new, welcome updates: NordVPN and ExpressVPN now have Arm-native apps, and



Qualcomm provided a selection of laptops, upon which were preloaded benchmarks ranging from Cinebench to Geekbench.

Google Drive—a noted exception to the Windows on Arm ecosystem—will gain an Arm version by the end of the year.

QUALCOMM 8-CORE SNAPDRAGON X PLUS PERFORMANCE

Qualcomm offered us a chance to run some early benchmarks on the Snapdragon X Plus. Qualcomm provided a selection of laptops, upon which were preloaded benchmarks ranging from Cinebench to Geekbench. Because of time considerations, we ran two and compared

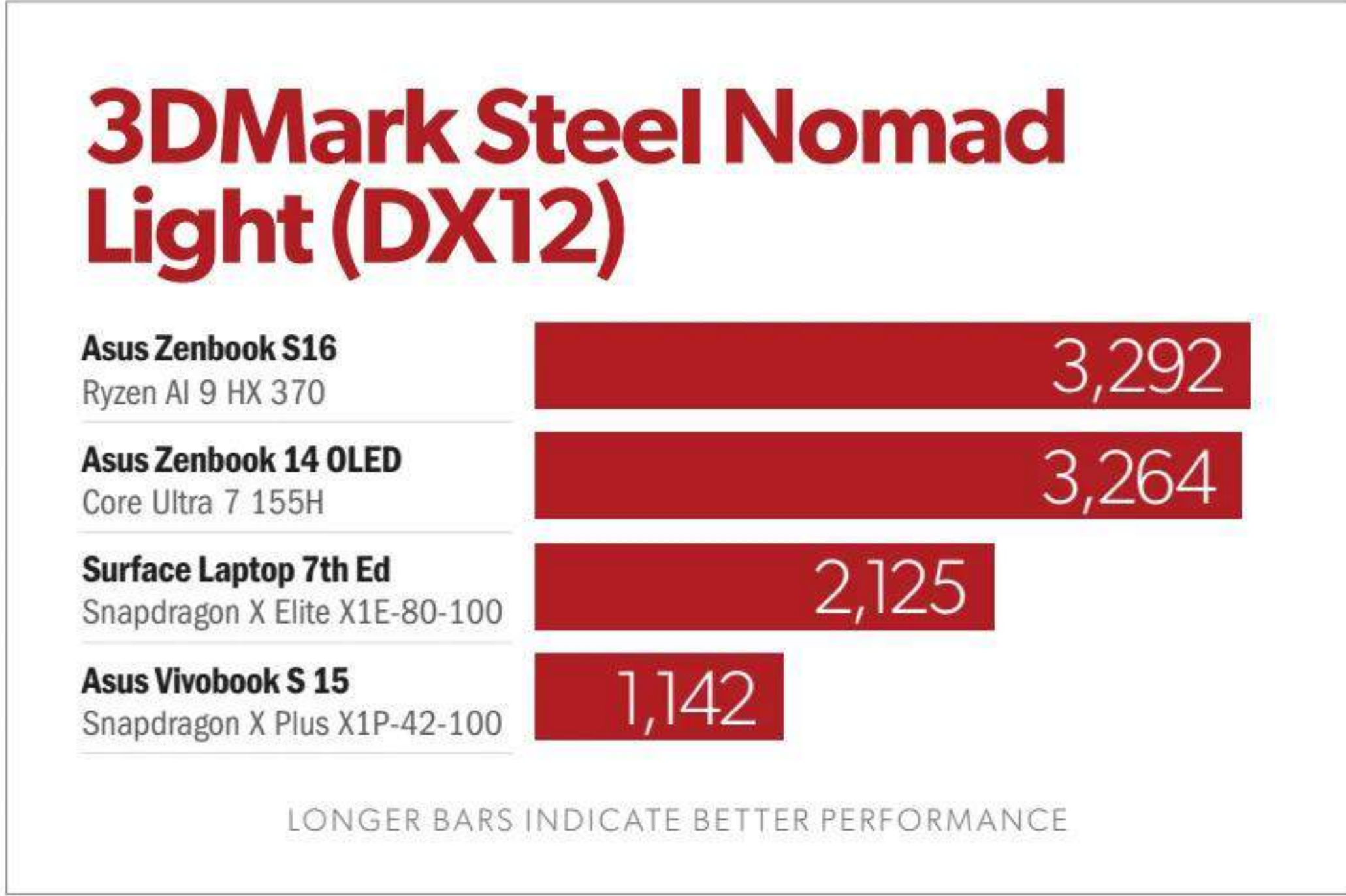
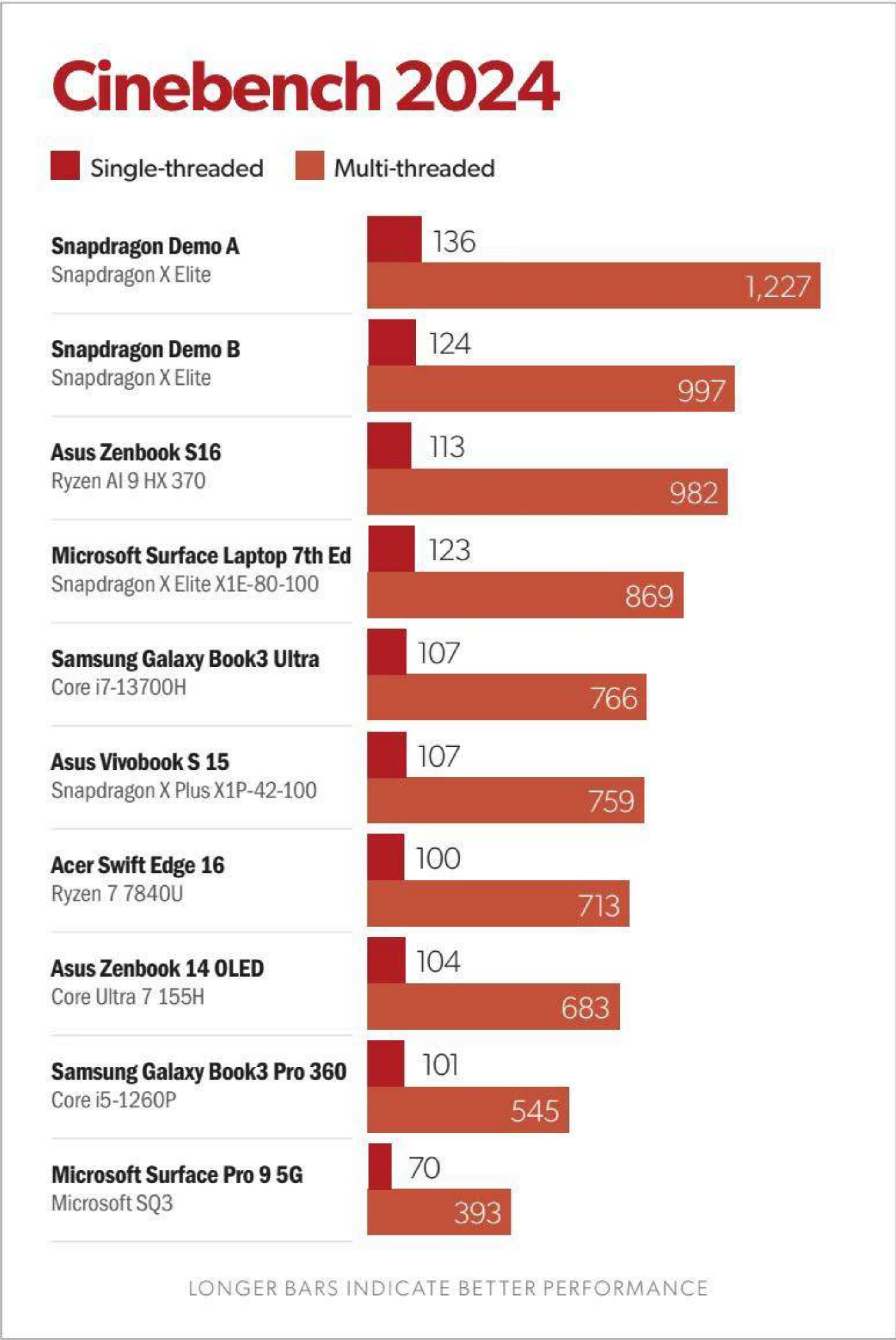
them to previous tests. The test machine was an Asus Vivobook S 15, with a Snapdragon X Plus X1P-42-100 inside—the slowest of the new X Plus chips. A Qualcomm representative said that the price of the Vivobook S 15 is just \$899, even with features like a 15.6-inch 3.5K screen.

You’ll notice some of the earlier test benchmarks listed here, even though we later tested the Snapdragon X Elite on shipping hardware. That’s just to give you an idea of what Qualcomm promised, and what it eventually delivered. The differences also represent updates to the drivers as well.

Essentially, what we’re looking at here is an answer to this question: Is this new X Plus chip good enough for the price? And how will it all affect the battery life?

We can answer the first question but not the second. We also don’t know the price of the Acer Vivobook S 15.

The market for long-lasting productivity PCs just got even more interesting. 🔌



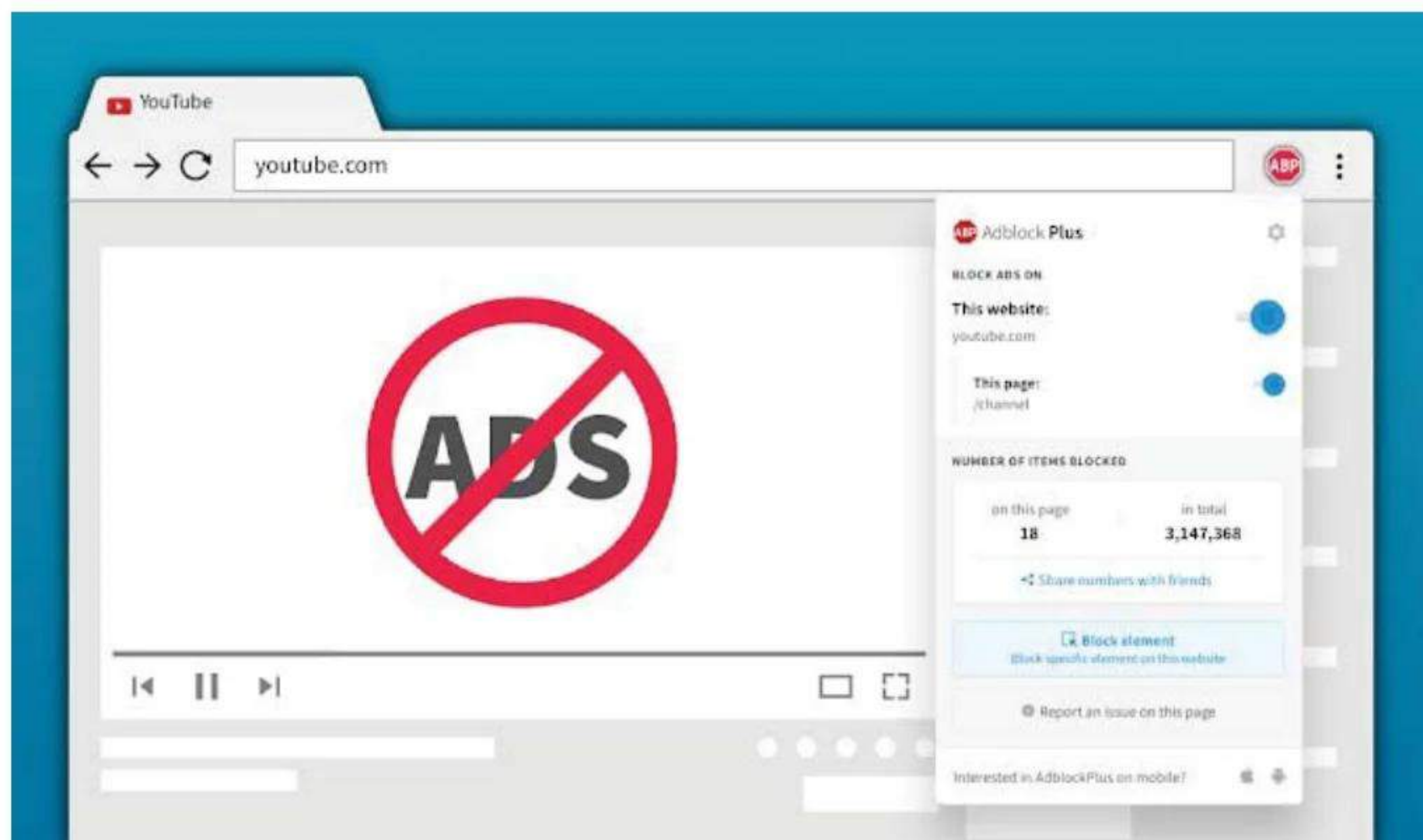


Four ad blockers that still work with Google Chrome

The popular uBlock Origin will stop working in Chrome soon, but there are options that will keep going under the new standards. **BY MICHAEL CRIDER**

Google is changing how Chrome extensions work on the desktop and Chromebooks. While the Manifest V3 changes are billed as ways to improve safety and efficiency, the way they also limit the way ad-blocking extensions like uBlock Origin currently work (fave.co/4dY2tVC) has drawn a lot of criticism.

I'm sure the fact that Google is the world's biggest advertising company has nothing to do with it. Personally I'd recommend changing browsers (fave.co/4dY2tVC). Chrome has been getting under my skin lately, so that's exactly what I did, and there are plenty of alternatives that will remain compatible with current Chromium extensions for longer than Chrome itself.



Adblock Plus has one of the best setups for comprehensively blocking advertising across the web.

But if you want to stick with Chrome (or you're using a Chromebook and you don't really have a choice), here are four alternatives that have already been upgraded to the new standard. They're losing some capabilities due to Google's more restrictive implementation, but they should still block the majority of advertising on the web.

ADBLOCK PLUS

Adblock Plus (fave.co/4gmlCko) is probably the most popular ad-blocking extension for Chrome, if only because it's the first one that pops up when you search for blockers on the Chrome Web Store extension repository. It's been going

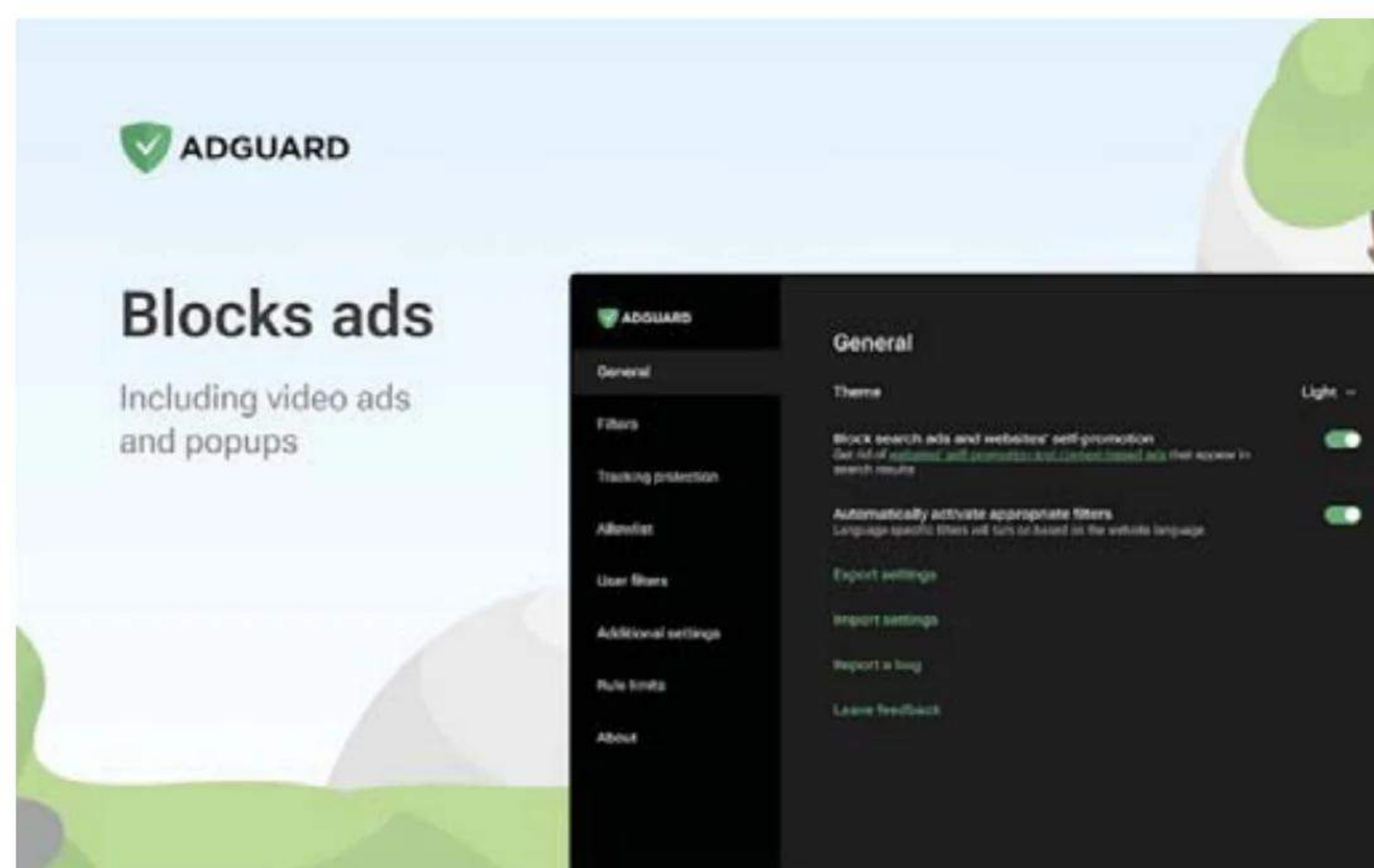
strong for over 20 years, and it has one of the best setups for comprehensively blocking advertising across the web.

The extension has all the basics covered, including an allow list that lets certain websites display ads by default (fave.co/4d1ObBV), the ability to subscribe to public lists of blocked domains, and the ability to block advertising cookies and other background

trackers. Adblock Plus has already been updated to be compliant with Manifest V3, so it's good to go.

ADGUARD

AdGuard is the blocker I use in my browser, because it's easy to set up a reverse allow list.



AdGuard won't connect to websites that it knows maliciously mount phishing attacks or spread malware.

This lets me toggle ad blocking on only for websites that are particularly sketchy (or annoying). It's particularly effective on YouTube, as I've explained before (fave.co/3TmUtVR).

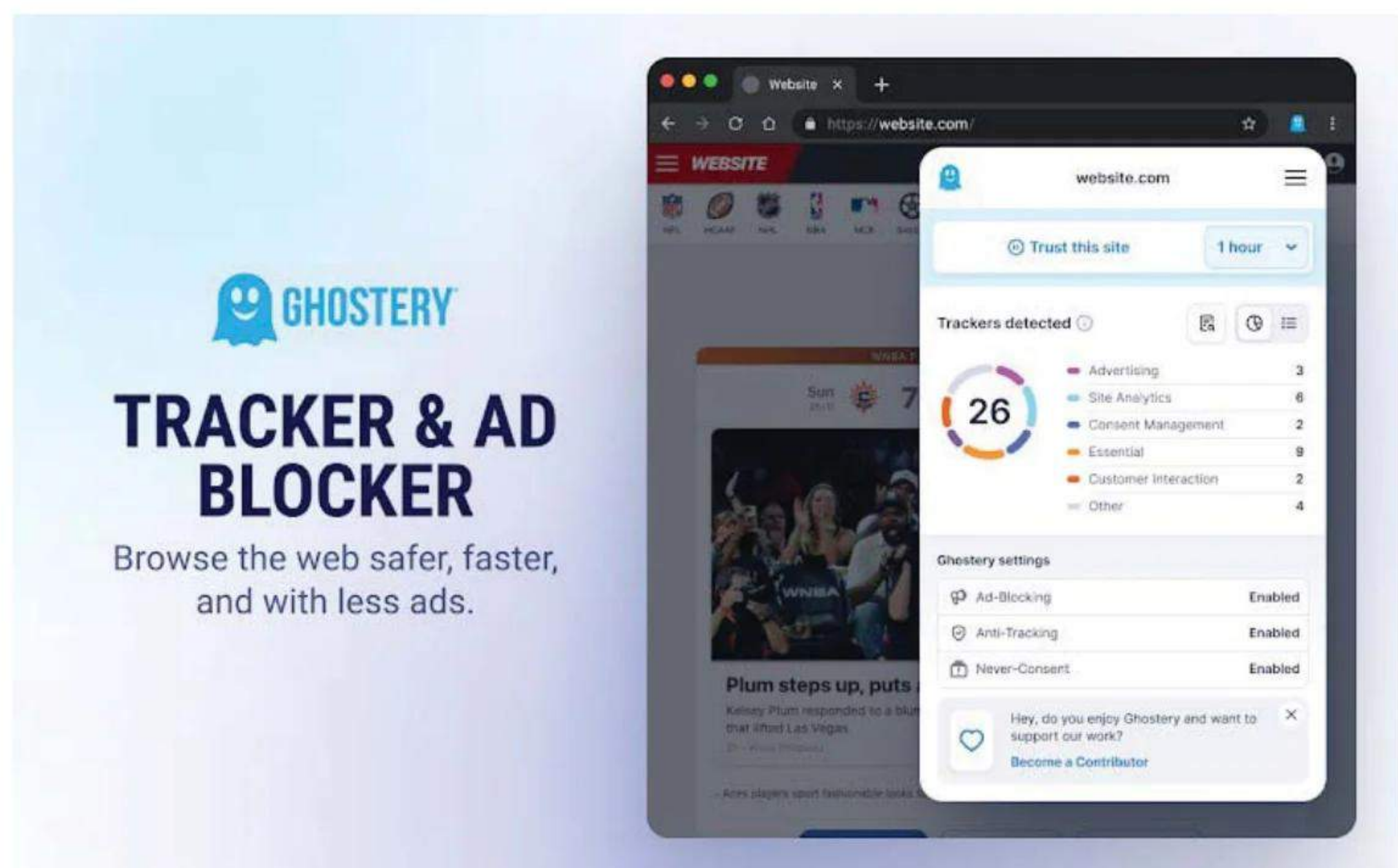
AdGuard will flat-out refuse to connect to websites known to maliciously mount phishing attacks or spread malware, and it's

good at collapsing the elements of the page that normally display ads, making formatting much less cluttered. AdGuard's Manifest V3 version is currently in beta testing (fave.co/47rJoJ2), and it should be transitioning into the primary extension long before the time it becomes mandatory.

GHOSTERY

Ghostery (fave.co/3XFBb0f) is a blocker and service that's all about blocking tracking and providing privacy. Unfortunately, the developers say that Manifest V3 will make that a lot harder (fave.co/4eiOGZo), as it seems designed to benefit Google as an advertiser far more than Chrome users.

All that being said, Ghostery version 10 is compliant with V3. But the company maintains that Firefox, the only major independent browser not based on



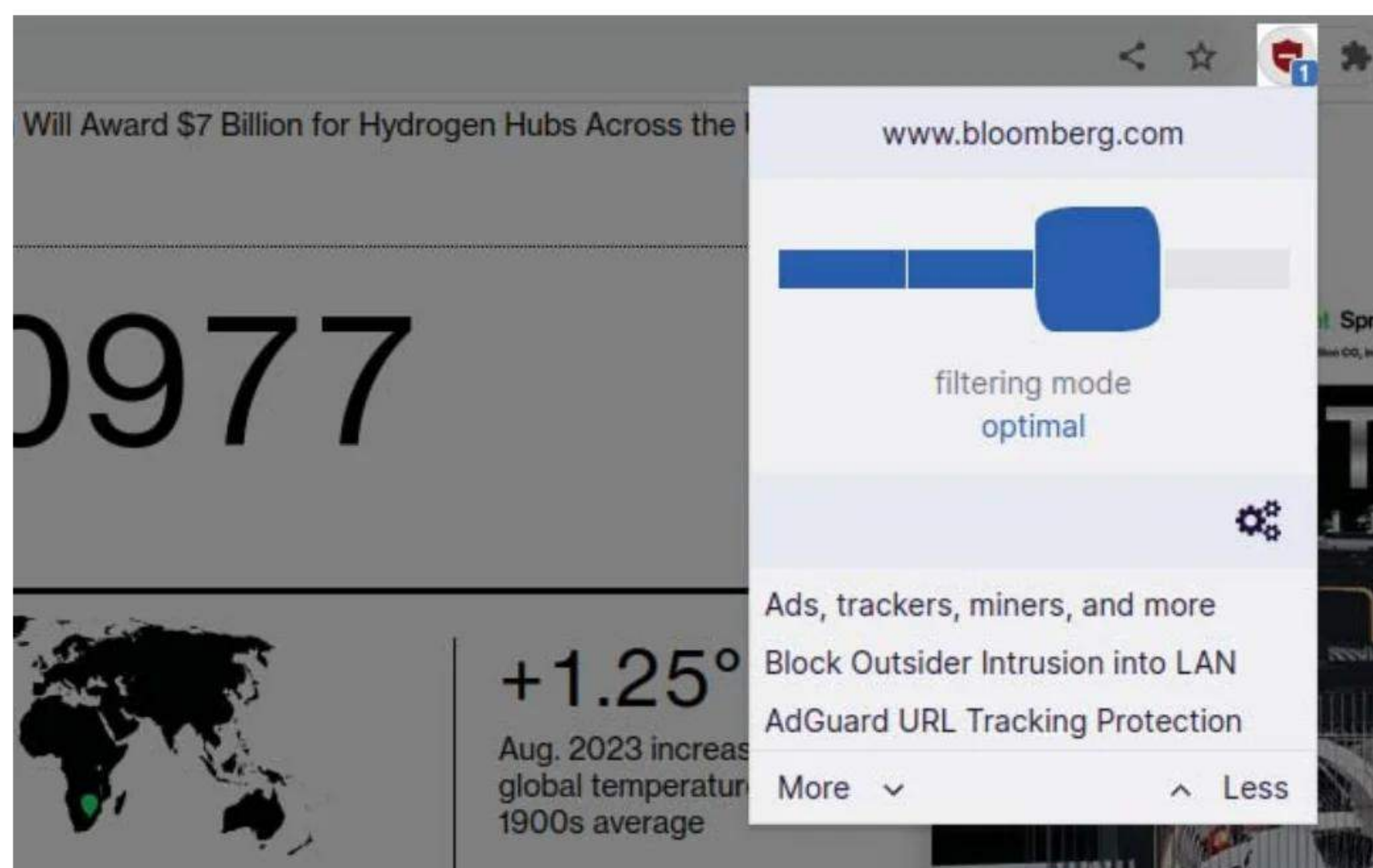
Ghostery is all about blocking tracking and providing privacy.

Chromium, is a better alternative if you want to make maximum use of its privacy-preserving features.

UBLOCK ORIGIN LITE

The three ad-blocking products above—all of which offer a commercial upgrade—are complying with Google's Manifest V3 ultimatum because they have to. But uBlock Origin is a product with a single developer, who doesn't sell an upgrade. A lot of people switched over after Adblock Plus started selling access through its Acceptable Ads program.

But developer Raymond Hill (fave.co/4ekc20S) has made something of a protest against the more restrictive Manifest V3. Instead of updating the original uBlock Origin to be compliant, he's created a second version, uBlock Origin Lite (fave.co/3ZkynXK).



uBlock Origin Lite maintains most of the original's functionality.

It will maintain most of the original's functionality, but may be less effective due to V3's lack of access to the network layer.

OTHER OPTIONS

If you want to stick to Chrome and still block ads, there are other options. Most ad blockers also have a separate program implementation, an app that runs outside the browser and blocks ads on all applications that access the internet. AdGuard (fave.co/4eoi80f) offers this on Windows, and there are plenty of choices on mobile.

You can also block advertising at a more fundamental level by using a VPN (fave.co/3FtTTMs), which will filter all the traffic coming into your PC. You could even extend this to every device in your house with a VPN running on your web router itself, or routing traffic through a DNS server (fave.co/47t4J4O). If you do this at the router level with

something like a Pi-hole (fave.co/4d2MfZN), it will have the bonus effect of blocking ads on other devices, like your smart TV.

VPN and DNS-based blocking and blocking tends to be much broader, and since it's accomplished by routing your traffic through a remote server, it's harder to filter what gets in and what doesn't. OS-based blockers

run into a similar problem, because they block based on domains rather than page elements. So websites that route advertising traffic through their own services, like Facebook, Amazon and (eventually) YouTube (fave.co/3TmUtVR), may be able to serve up ads unimpeded.

Realistically, there's no way to avoid advertising in every part of your digital life. And it's not as if I can claim to be impartial here—most of the money that pays my salary at PCWorld comes from either advertising or affiliate revenue, and the same is true for almost all sites that cover technology news and reviews. But these tools should go a long way towards making the web easier and safer for you to navigate.

Although if you've found this or any other PCWorld articles helpful, a nice way to say thank you would be to turn off the ad blockers when you visit. 

If you are anywhere in your journey with substance use disorder,

I want you to stop,
look around
and open your heart.

Revel in the abundance
of your existence.
See how small
substance use disorder
can be when sat next
to all that you are
or ever could be.

Fill your existence
with beauty, purpose
and a life of service.

And your substance
use disorder—
your history of
addiction,
the things you
may have done
that you are not
proud of—will one day
be small enough
to deal with
while allowing you
space to live this life
of joy.

Hold on.

We are not the sum
of our scars but rather
a beautiful mosaic of the
life they hold together.

—Joseph
Washington, DC
In recovery from
substance use
disorder

Learn how
substance use
recovery can

StartWithHope.com



CHECK IN ON YOUR FRIENDS

EVEN THE “STRONG” ONES



It's okay to not be okay.
Learn how to reach out to a friend about
their mental health at SeizeTheAwkward.org.

SEIZE THE AWKWARD



American
Foundation
for Suicide
Prevention



The Jed Foundation





Lenovo Yoga 9i 14 Gen 9: Punchy sound and stunning OLED

The audio is truly sensational! **BY MARK HACHMAN**

Sometimes you get a laptop that exceeds your expectations in surprising ways. The Lenovo Yoga 9i 14 Gen 9 (just Yoga 9i from here on out) does exactly that. Look at it and you might think it's just another 2-in-1 laptop folds around to tablet mode. But this laptop has a party trick that I absolutely love.

That isn't to say the Yoga 9i is perfect, of course. What you have, as is the case with every laptop, is a bundle of compromises, a device that asks: What's most important to

you? If it's gaming, you give up battery life. If it's productivity, you give up fun. And if it's sleek portability, like the Yoga 9i, you give up ports and spacious keyboard.

SPECS

If you're going to spend \$1,500 on a laptop, you definitely want to get something good for your money, and overall the Yoga does deliver that. An Intel Core Ultra 7 155H processor powers this guy, which by now is a familiar entry in this era of the laptop world.

Unlike the Lenovo Yoga Pro 9i, a suspiciously similarly named laptop, this actually is a 2-in-1, which means you can fold the display all the way back.

The fact that you get a decently high-resolution OLED display with a fast refresh rate is a boost to the 2-in-1 feature. A tablet mode is pretty pointless with a subpar screen, after all. At this price you'll get 16 GB of RAM, but if you want to spend more you can bump that up to 32 GB and max the display resolution out at 3840×2400. You do get a couple of bonuses as well—a slim pen that charges over USB-C and a sleeve. The pen will magnetically attach to the lid (but it does not charge in that position), and the sleeve includes a pen loop. The pen does the job, but without internal storage, I'm certain I'd lose it in short order.

Specs as tested:

CPU: Intel Core Ultra 7 155H

Memory: 16GB LPDDR5-7467



You can fold the display all the way back.

Graphics/GPU: Intel Arc integrated graphics

Display: 2880×1800 OLED Touch 120 hz

Storage: 1 TB PCIe Gen 4 2242 M.2 SSD

Webcam: 2.5K IR webcam

Connectivity: 2x Thunderbolt 4/USB-C, 1× USB-C 3.2 Gen 2 PD 3.0 DP 1.4, 1× USB-A 3.2 Gen 1, 3.5mm combo audio jack, 1 Lenovo Slim Pen

Networking: WiFi 6E, Bluetooth 5.3

Biometrics: Fingerprint reader, IR Webcam

Battery capacity: 75 watt-hours

Dimensions: 12.44×8.66×0.64 inches

Weight: 2.91 pounds

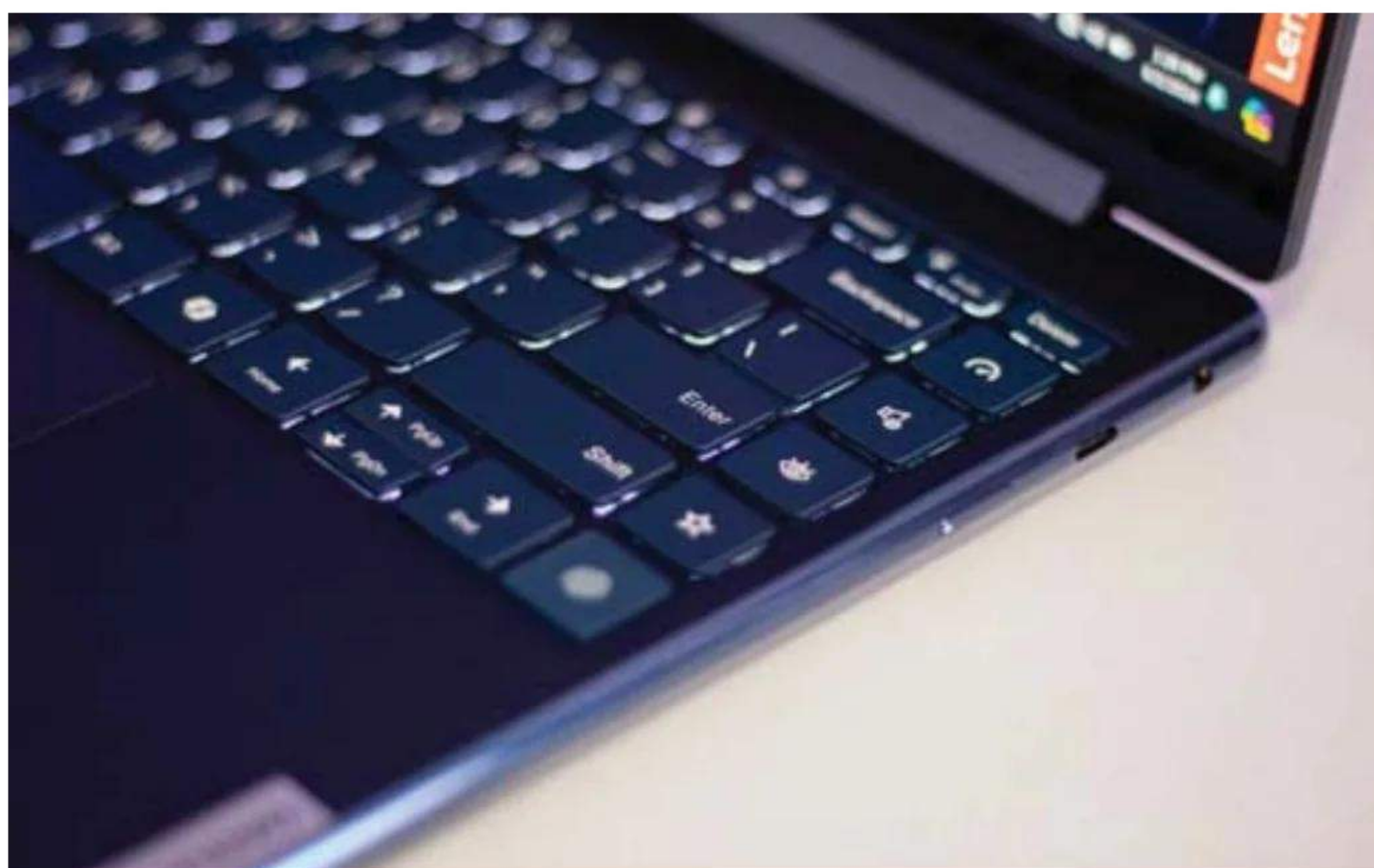
MSRP: \$1,449

BUILD QUALITY AND LOOKS

Lenovo ThinkPads have a (deserved) reputation for a bland business look. The

Yoga line, however, tends to be a bit more fun in appearance without taking too many risks. And that's the case here.

You'll find some familiar details, like the same webcam jut-out found on practically all of Lenovo's laptops. And some interesting tidbits, like that speaker grill hidden in the hinge. But that grill is the



The Lenovo feels very sturdily put together.

very first sign that this is a laptop for more play than work, and it shines. I like the Cosmic Blue colorway, but you can go with a more traditional Luna Grey if that's your jam. The blue is much darker than photos might suggest, but it shimmers a bit as you lean left and right with a metallic sheen that adds just a touch of whimsy.

I appreciate that there are no creaks or squeaks as I use the device; everything feels very sturdily put together. That's sometimes not the case with 2-in-1 laptops that feature a 360 hinge, but even that's pretty strong. As I type, the display barely bounces (if at all), and when I do fold the thing to tent or table mode, it feels natural, with just the right amount of resistance.

KEYBOARD, TRACKPAD, AND PEN

The keyboard, however, leaves a little to be desired—namely, more room. Lenovo places a column of buttons on the right edge to give you theoretically handy little features, like a quick sound profile, a favorite app button, a way to quickly switch between audio profiles, and a fingerprint reader. But

that means everything else shifts to the left and shrinks to make room. Likewise, the cursors are scrunched together.

Key travel is fine, all things considered, but typing is still a bit of a pain. I have to hold my thumbs just so to avoid bumping them together, which isn't great for long-term



The Lenovo Slim Pen is handy if you prefer handwriting in tablet mode or want to draw occasionally.

ergonomics. And similarly, the arrow keys, particularly up and down, are small and thus harder to use.

The trackpad itself is fine, and perhaps because of the somewhat awkward position I hold my hands in to use the keyboard, I didn't find myself accidentally brushing it. Since this is a Yoga-series laptop, you won't find the red dot in the keyboard or the extra buttons at the top of the trackpad, or any dedicated buttons at all really. The corners do click in a satisfying way, though.

This Yoga also comes with a Lenovo Slim Pen, which can be handy if you prefer handwriting in tablet mode or want to draw occasionally. It has 4,096 levels of pressure sensitivity, which is good enough to do some sketching. I'm no artist, but I did find myself wishing for a bit more control when I tried the pen out in drawing apps. The pen charges over USB-C, which is mildly inconvenient and seems to drain whether or not you're using it.

You won't find a storage slot either. Instead, the pen will magnetically clip to the laptop lid—better than nothing, but not the most secure option. I can see myself losing it quickly.

It's probably worth mentioning that the Yoga

also comes with a sleeve. It's fine for a sleeve. I do appreciate that it has a pen loop, so that'll help with stylus storage. But while I don't mind included accessories, I'm not sure I'd personally depend on a sleeve to protect my laptop.

SPEAKERS AND DISPLAY

Usually about now I'd offer the usual advice that generally laptop speakers are terrible, and it's almost bad that they are included. But the Yoga is so different. These speakers are, dare I say it, good! Like, very good! The Yoga not only gets impressively loud, but also sounds good at those louder levels.

Somehow there's bass and treble, and songs sound like what you'd expect to hear. I didn't feel the need to break out headphones for once, and even movies had some unexpected punch. The Yoga is



The Yoga not only gets impressively loud but also sounds good at those louder levels.

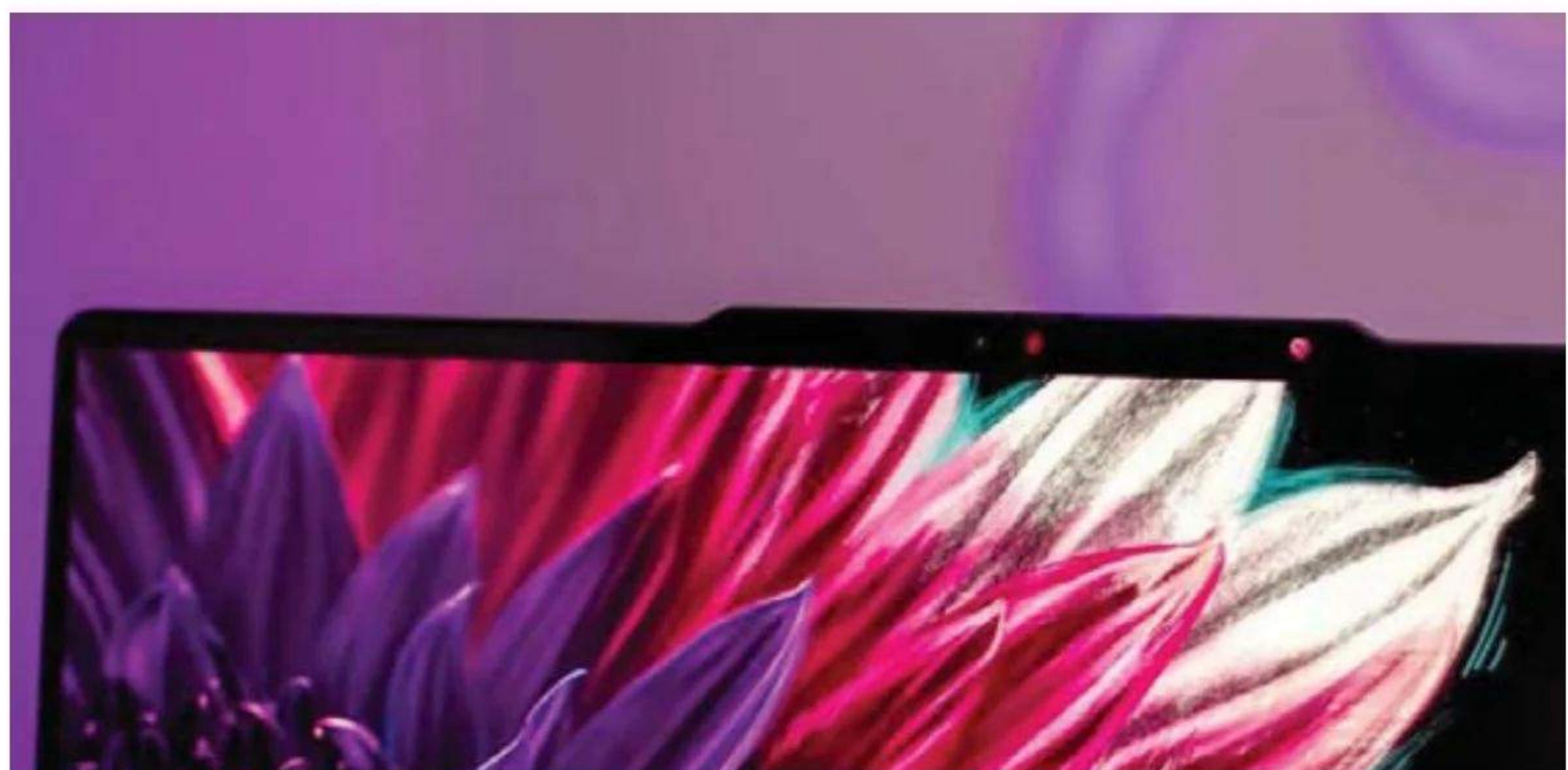
primarily intended as a media device, and thank goodness it has the kind of speaker system that stands up to that promise. It's probably because Lenovo essentially buried a sound bar in the hinge, which you could argue detracts from the clean look,

but I say it's worth it for sound of this quality.

This Yoga also includes an OLED display, and it looks great. Blacks are inky and dark, which makes movies look all the better, considering that it seems like dark scenes are the norm these days. The display gets decently bright, too, though not as bright as other non-OLED displays. With its 120hz refresh rate, it's a smooth display that would make it good enough for gaming if this device had a dedicated graphics card. Alas, however, it doesn't, but you can always do some casual gaming thanks to modern-day integrated graphics.

WEBCAM, MICROPHONE, BIOMETRIC OPTIONS

Along the top edge of the display you'll find the Yoga's webcam, with an integrated privacy shutter. I like that it's a hardware shutter with a bright red color to that cover so



Along the top edge of the display you'll find the Yoga's webcam, with an integrated privacy shutter.

you know for sure the webcam is blocked. As for the webcam itself, it's nothing special. The angle from this camera is particularly "up the nose" even more so than on other laptops I've worked with lately.

The colors are washed out, and the detail is just good enough to be passable. Essentially, it'll serve its purpose for a Zoom call, but it won't make you look that flattering along the way. It's an IR camera, though, so it works with Windows Hello to log you into your profile.

The microphone also isn't the best or the worst. It gets the job done and nothing more. If you're in video calls every day, you may want to get an external microphone that does a better job of noise cancelling and reproducing the full quality of your voice. But this isn't really a work productivity device, and generally microphones work better with headphones on, so that's something to keep

in mind. If you're occasionally in video calls, the hardware will do the job overall. Just maybe lift the laptop up to eye level for a more flattering look.

As I mentioned above, you can log in with your face using the camera, but if you'd rather use a fingerprint reader, that's an option as well. It works well enough, although in my experience the face unlock is a little faster. More options is usually better, though I don't love the dedicated extra button row to the side, which includes the fingerprint reader. This leads to a squashed keyboard layout. The upshot to that choice is that the fingerprint reader is a nice-size button.

PORTS AND CONNECTIVITY

The Yoga's port situation is a bit of an odd duck. On the one hand, there's the USB-C ports, which make me happy. You have three

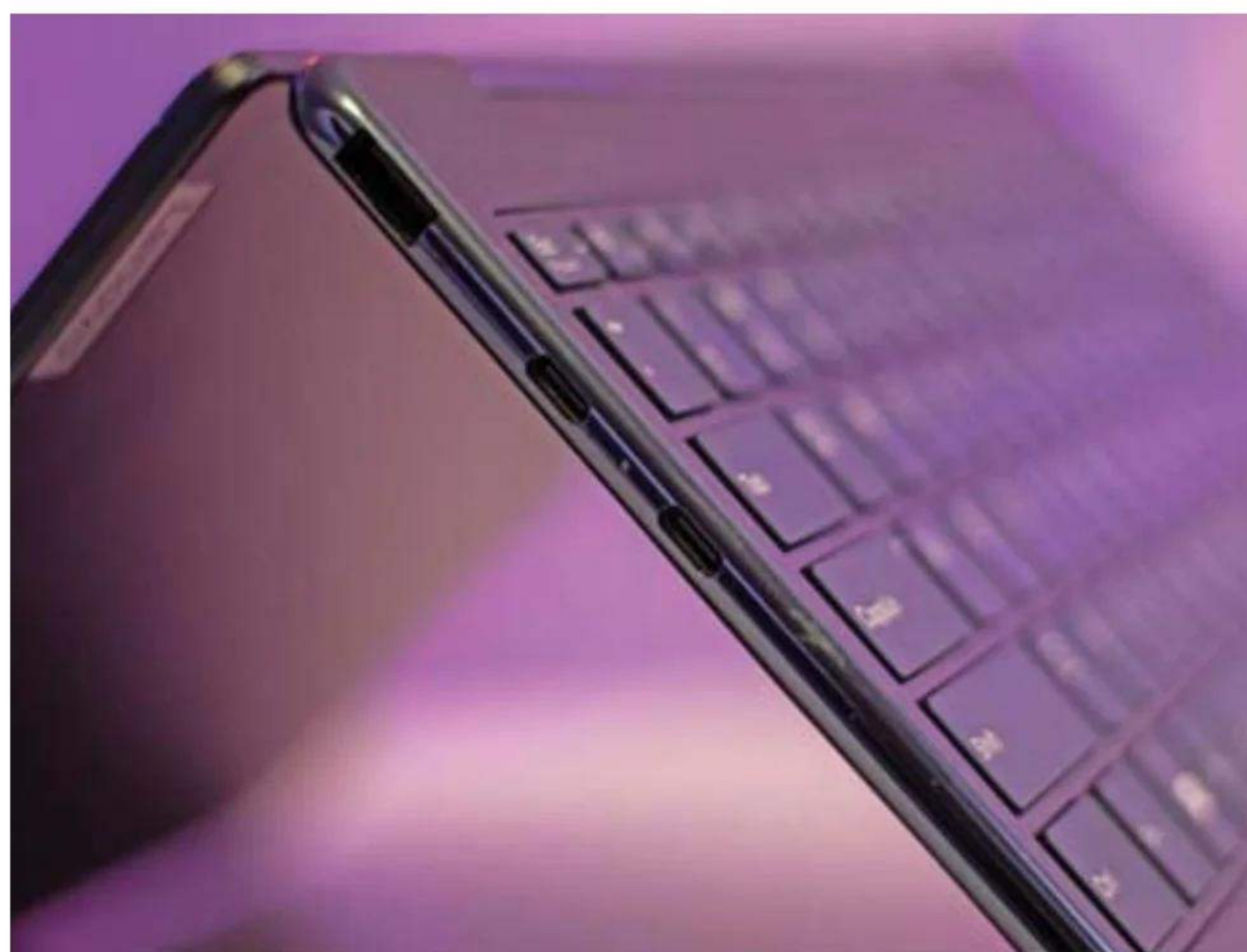
of them, two Thunderbolt 4 ports and one 3.2 Gen 2 PD 3.0 DP 1.4 port. Even better, they're not all on the same side. The USB-C ports double as power, so it's a pet peeve of mine when they're all on the left side of the laptop. Here you have choices when you decide to plug in your laptop, and that's great.

The singular USB-A port would be nice too, considering it's a fast 10Gbps port, but it's very oddly placed. It's as close to the hinge as you can get. Everything technically works there, but it feels and looks odd. When I go to blindly insert a flash drive, I never quite get to the right spot and end up having to look.

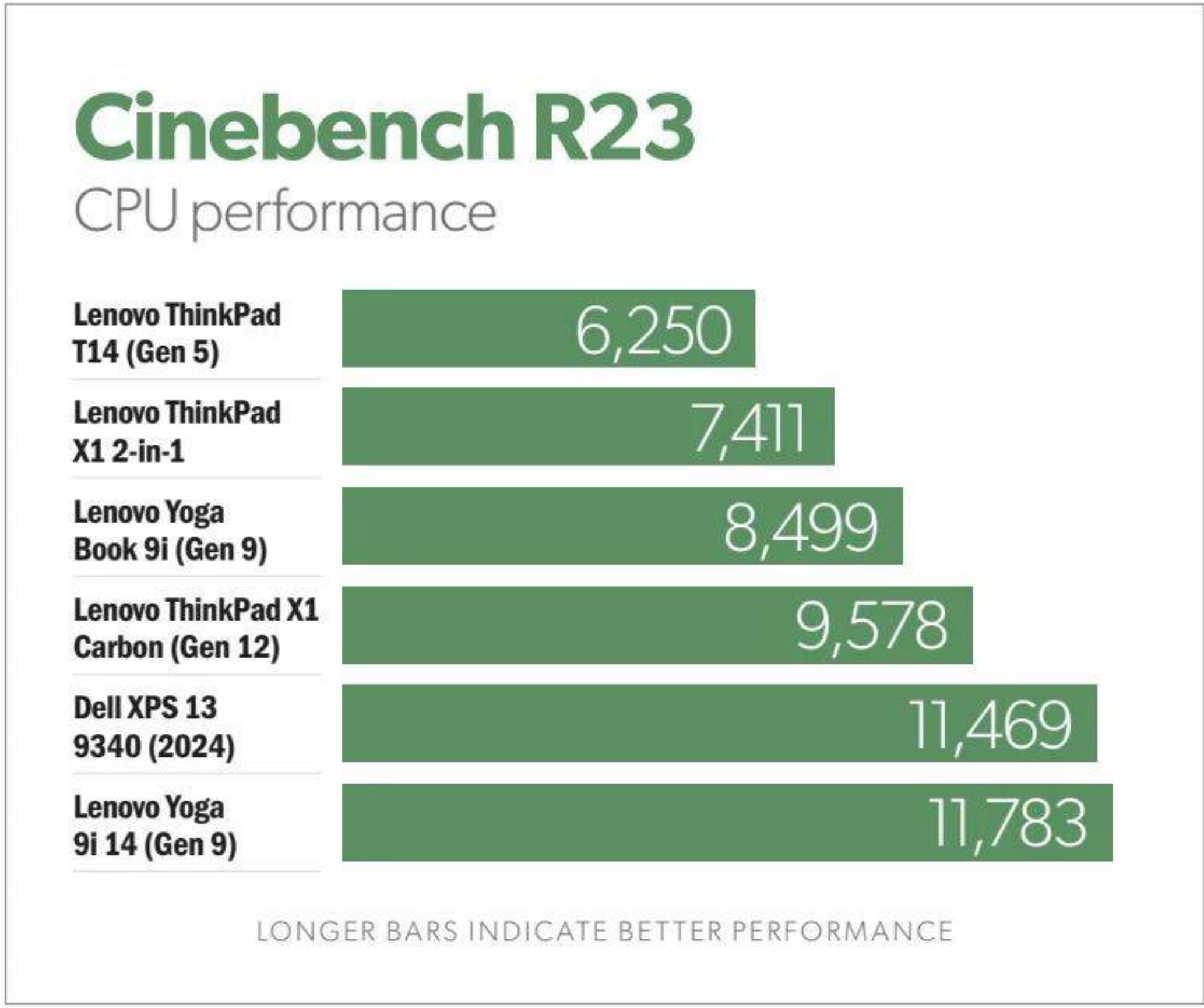
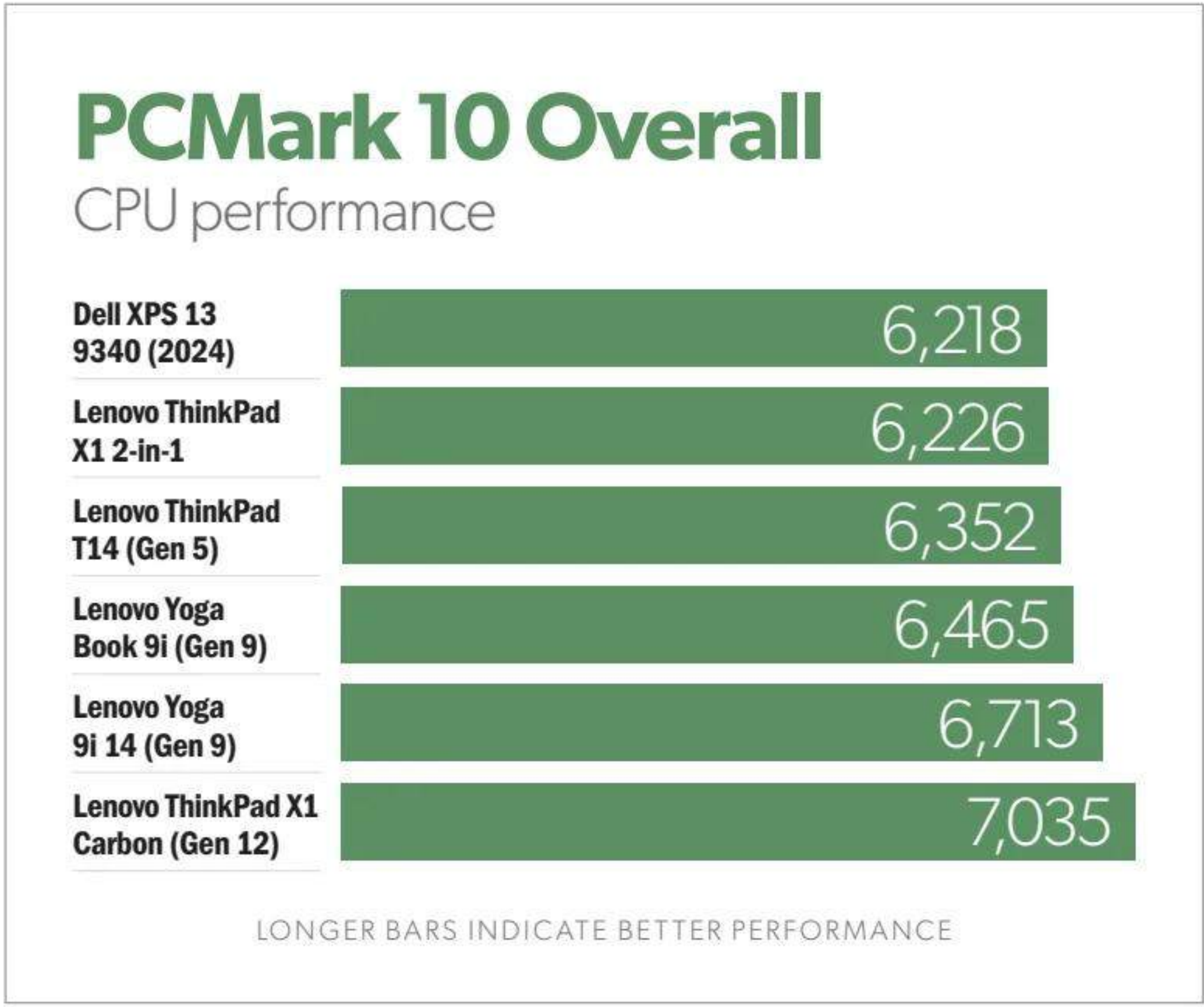
I'm sure with time I'd get used to it. I'd probably default to a different USB-A port, but that simply isn't an option. You only get the one. And you won't find any HDMI, SD Card, or Ethernet ports either, so I hope you don't need those. I know I've mentioned this

is a media PC and so I've given it passes here and there, but it's harder to overlook in this case. Just be aware going in that if you want to use an external monitor, you'll want something that works with Thunderbolt ports.

You do get Wi-Fi 6E, which isn't bleeding edge but is futureproof enough for most homes. If you don't have a Wi-Fi 6E router, you'll want one to get the most out of this laptop and modern smartphones. Bluetooth



The Yoga's port situation is a bit of an odd duck.



5.3 is as new as it gets, which is a nice bonus if you decide to go with a set of wireless headphones.

PERFORMANCE

The Lenovo Yoga 9i 14 Gen 9i packs an Intel Core Ultra 7 155H processor. We’re pretty familiar with this processor by now, but that doesn’t automatically mean we can guarantee good performance out of every machine. Cooling makes a major difference, and we’ve seen some laptops from Lenovo throttle early. You can usually expect pretty great battery life out of the latest Core Ultra 7 laptops, but we have to make a special note concerning this particular model.

The Yoga 9i starts off strong in our overall PCMark test, coming in second only to the ThinkPad Carbon, which isn’t too shocking. PCMark gives us a general idea of overall performance, and the results would suggest a strong showing. Real-life usage matches up to

that as well. While I never tried to game with it, in my everyday usage it never slowed down or struggled to keep up.

The Yoga puts another strong showing in our Cinebench 23 test, actually topping the list this time. Cinebench 23 is a heavily multithreaded test that runs pretty quickly, and that can sometimes give an advantage to CPUs with more cores. We’re running Cinebench 24 on new laptops as well, but we don’t have enough results yet for good comparisons. Overall, this is a strong result, and that’s likely because Lenovo is tuning this device for its intended purpose: playing media.

Finally, with the Handbrake test, we start to see the limits of this Yoga and its focus on content consumption versus productivity. The Handbrake tests consists of encoding a large file over a long period of time, which taxes the system. The Yoga drops all the way to the bottom of the list in our comparison chart,

Handbrake Encode

Seconds



SHORTER BARS INDICATE BETTER PERFORMANCE

and again that’s no surprise. You don’t buy a 2-in-1 like this hoping to create movies. You buy it to watch movies.

To get a good idea of graphical capabilities, we run Time Spy, and here again the Yoga shines. Against the other integrated graphics laptops in this list, it shoots straight to the top. Keep in mind, though, that even with modern integrated graphics, you can’t expect too much out of

these systems. Some light Photoshop is certainly possible and maybe even basic movie editing, but trying to play a triple-A game on max settings or creating a complicated Adobe Premier project would be a lesson in frustration. It’s in many ways impressive how far integrated graphics have come, but they still don’t hold a candle to dedicated GPUs.

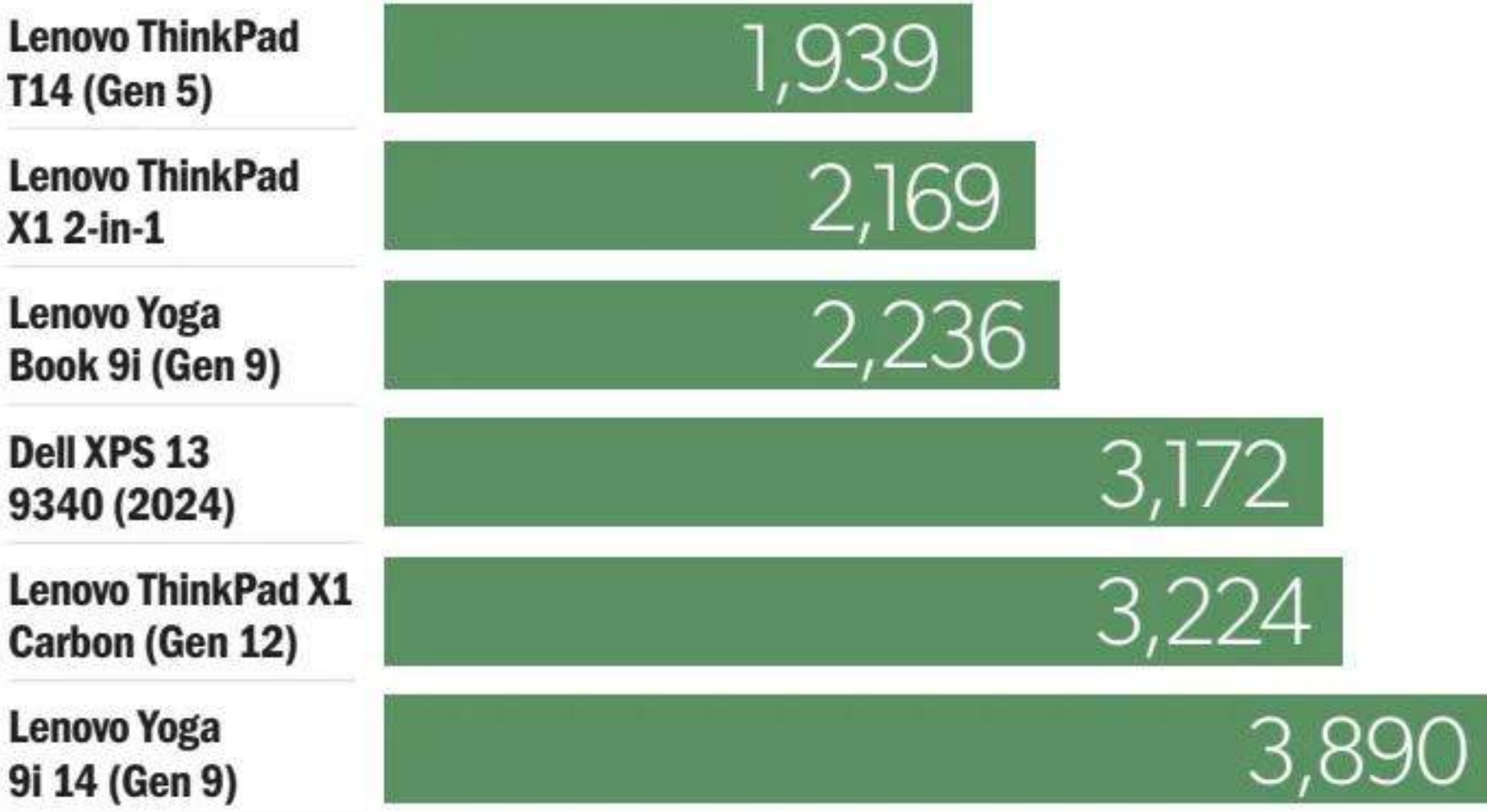
BATTERY LIFE

A note of transparency before we get into the full battery life results for our Yoga: The first review unit I received had serious issues in testing. We loop a locally stored copy of *Tears of Steal* at half brightness until the laptop dies. We’ll do this two to three times to double-check consistency, and that’s where the first model they sent me fell down.

I’d get as long as 18 hours of playback or as little as two and everything between. After a bunch of troubleshooting, Lenovo sent me a

3DMark Time Spy

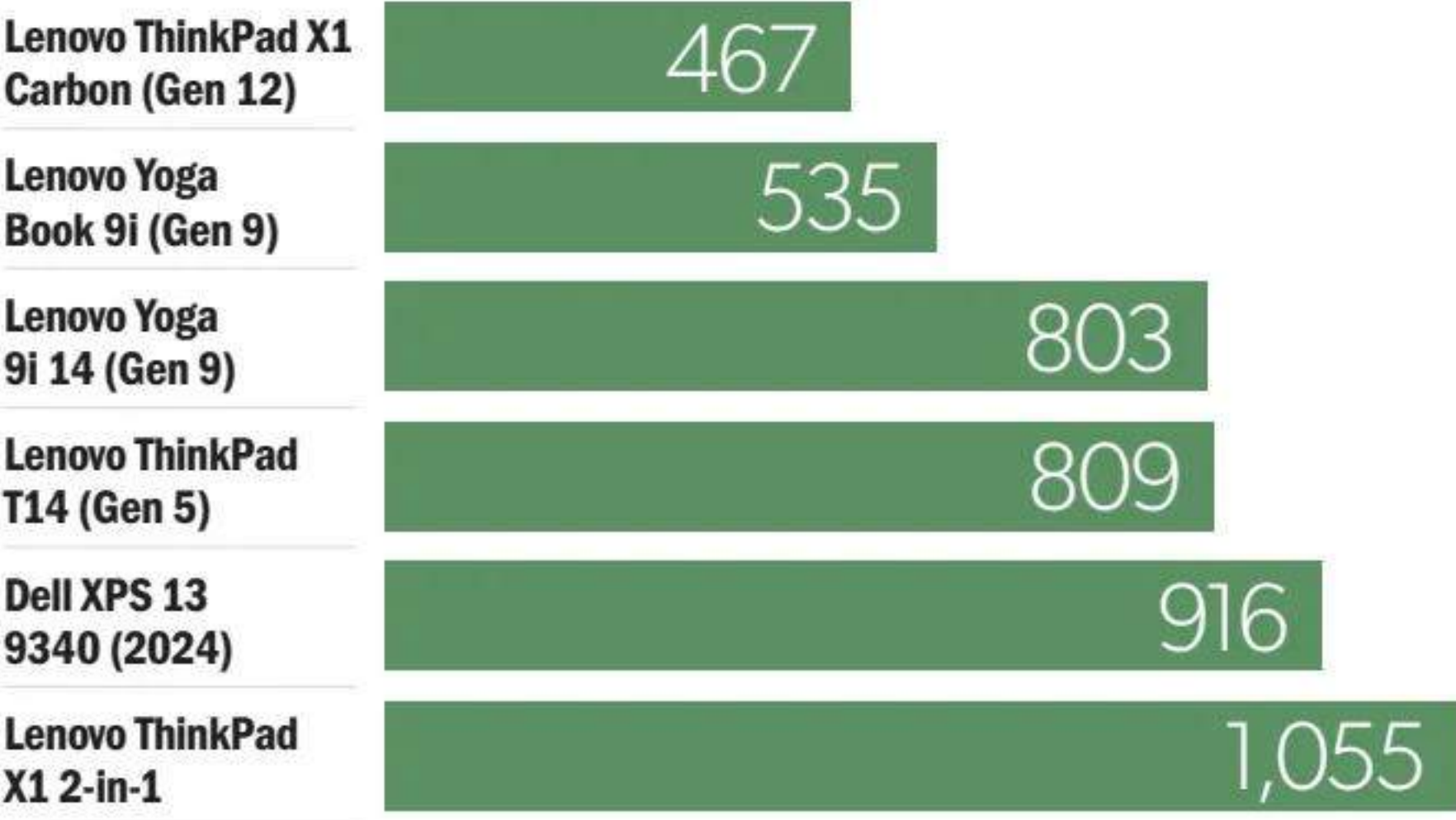
GPU performance



LONGER BARS INDICATE BETTER PERFORMANCE

Battery Life

Minutes



LONGER BARS INDICATE BETTER PERFORMANCE

new one under the shared assumption that I had a defective unit.

The review unit I'm testing now doesn't exhibit any of the same issues, but I mention this because I did see one unit with odd results. The Yoga in my hands now provided reliable consistent tests. At an average of 803 minutes, the Yoga is middle of the road at best for our slate of laptops with a similar processor. That could be down to the OLED touch display, the 75 watt battery, or just inefficient cooling. I'd blame the crazy speakers, but for my own sanity after so many tests, I had headphones plugged in during these loops.

But set aside comparisons for a moment, and it's kind of a strange world we live in now where 13 hours of playback is considered middle of the road. And that's assuming you play a video nonstop for 13 hours. You'll definitely get through the average plane flight in the U.S. and even some international trips. In everyday use, I easily made it through an entire workday with plenty of juice to spare. Standby time was equally longer than I'd realistically need. Could it be better? Yes, clearly. Is it bad? Not really.

BOTTOM LINE

Anytime you buy a laptop or any gadget really, you should start with a simple question: What do I want this for? Because not every laptop is for the same purpose: If you want to play games, you need something heavy,

loud, and with the strongest GPU you can afford. If you want a productivity machine, you can probably skip the touchscreen and 2-in-1 form factor. But laptops don't have to be for gaming or work. Sometimes they're the thing we use to unwind and enjoy a good movie.

That's the Yoga 9i in a nutshell. Are you looking for something to serve as a music player, a movie watcher, and an internet browser that's more powerful than an iPad but still capable of functioning like a tablet? Then you've found your laptop. For the speakers alone, I have to give this particular 2-in-1 the thumbs up for media consumption. Everyone in my home was shocked the first time we fired up music. The Yoga 9i isn't perfect by any means, especially that lack of ports and odd USB-A placement. But for its intended purpose, it's a very good entry and worthy of your consideration. 

Lenovo Yoga 9i 14 Gen 9



PROS

- Amazing speakers.
- Included accessories.
- Great display.

CONS

- Short on ports.
- Cramped keyboard.

BOTTOM LINE

The Lenovo Yoga 9i 14 offers a gorgeous OLED display as well as punchy speakers. What more could you ask for?

From \$1,449

Adata 970 Pro PCIe 5.0 SSD: Fast and fan-tastic!

With a fan-cooled heatsink, this top-shelf SSD delivered some record-setting results, as well as some middling ones. **BY JON JACOBI**



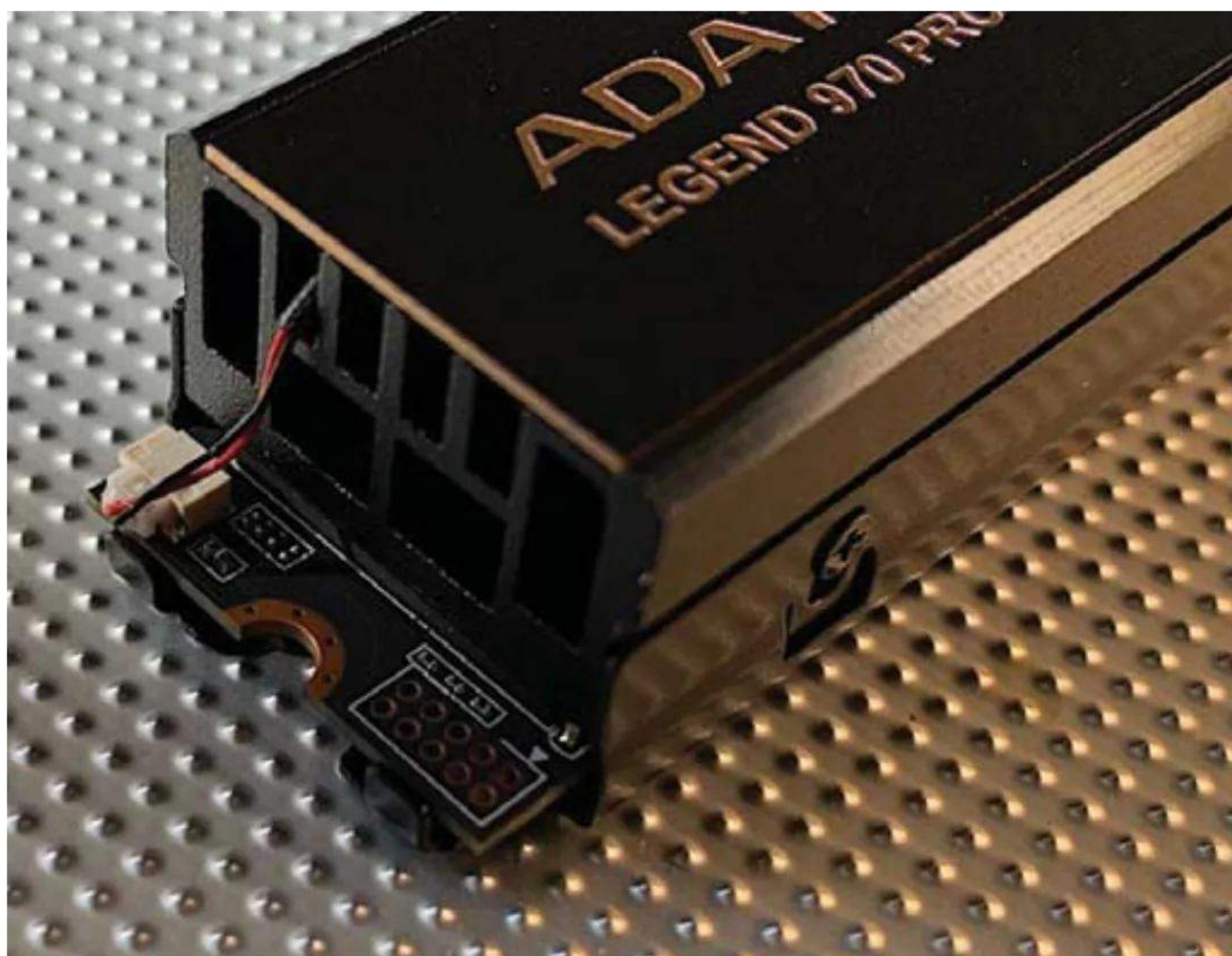
Adata makes very competitive SSDs, such as the Adata 970 (fave.co/41aPaLV) I reviewed last fall. The drive maker stays that course with 970 Pro, while straying from the norm in a couple key ways.

This SSD's test results were a generally excellent yet mixed bag—it aced the 450GB write and multiple-queue CrystalDiskMark 8

tests, but slowed during the 48GB transfers and single-queue exams.

FEATURES

The 970 Pro is your standard 2280, NVMe M.2 PCIe 5.0 SSD. One way it varies from the norm, and presumably earns its “Pro” moniker, is with its large heatsink cooled by a fan. You can see the power connector for the



Here you can see the power connector for the fan, as well as the substantial heatsink.

fan, as well as the rather beefy heatsink in the image above.

The 970 Pro also differs from the no-Pro 970 by using an InnoGrit IG5666 controller (as opposed to a Phison PS5026 E26) and 232-layer TLC NAND. Like the straight 970, it's a DRAM design, meaning the secondary cache is on-drive, as opposed to the drive using your system's DRAM for cache, as in a Host Memory Buffer (HMB) design. The distinction is

notable in the 970 Pro's comparatively fast random performance numbers. (HMB designs are very fast with large sequential transfers but slow with random operations.)

Adata's warranty on the 970 Pro is for five years, abridged by a 740TB per 1TB of capacity TBW (terabytes that may be written) rating. 740TBW is a generous step up from the 600TBW per 1TB of capacity we see with most drives.

PRICE

The 2TB 970 Pro that we tested costs \$299.99 on Adata's site (it's not yet available on Amazon). There will be 1TB and 4TB versions as well, but prices for those have not been announced.

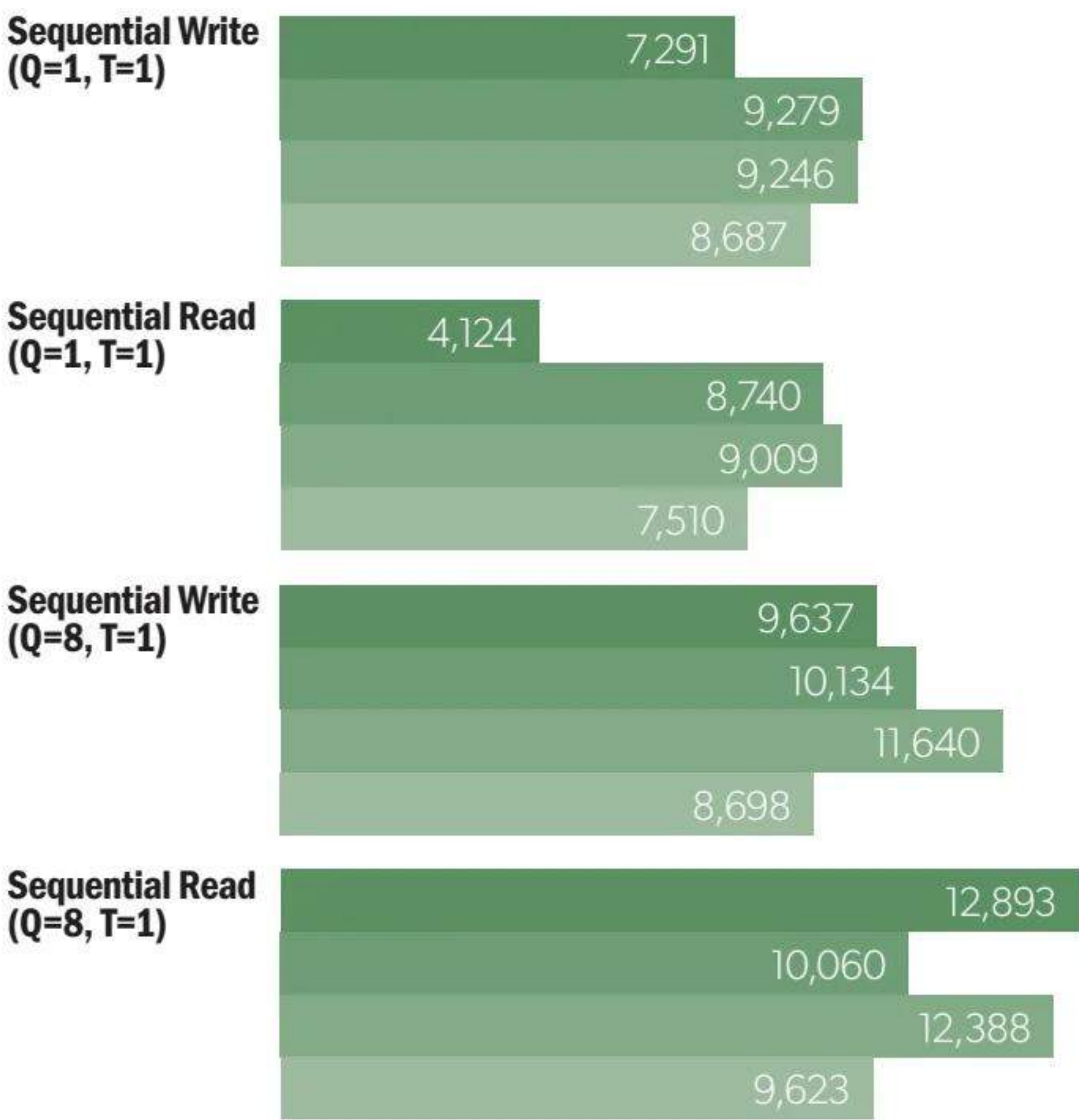


Our review unit was the 2TB version.

CrystalDiskMark 8 Sequential Performance

MBps

Adata 970 Pro Adata Legend 970
Corsair MP700 Pro Seagate FireCuda 540



LONGER BARS INDICATE BETTER PERFORMANCE

Multiple-queue performance is where the 970 Pro really shines. With a single queue, not so much.

PERFORMANCE

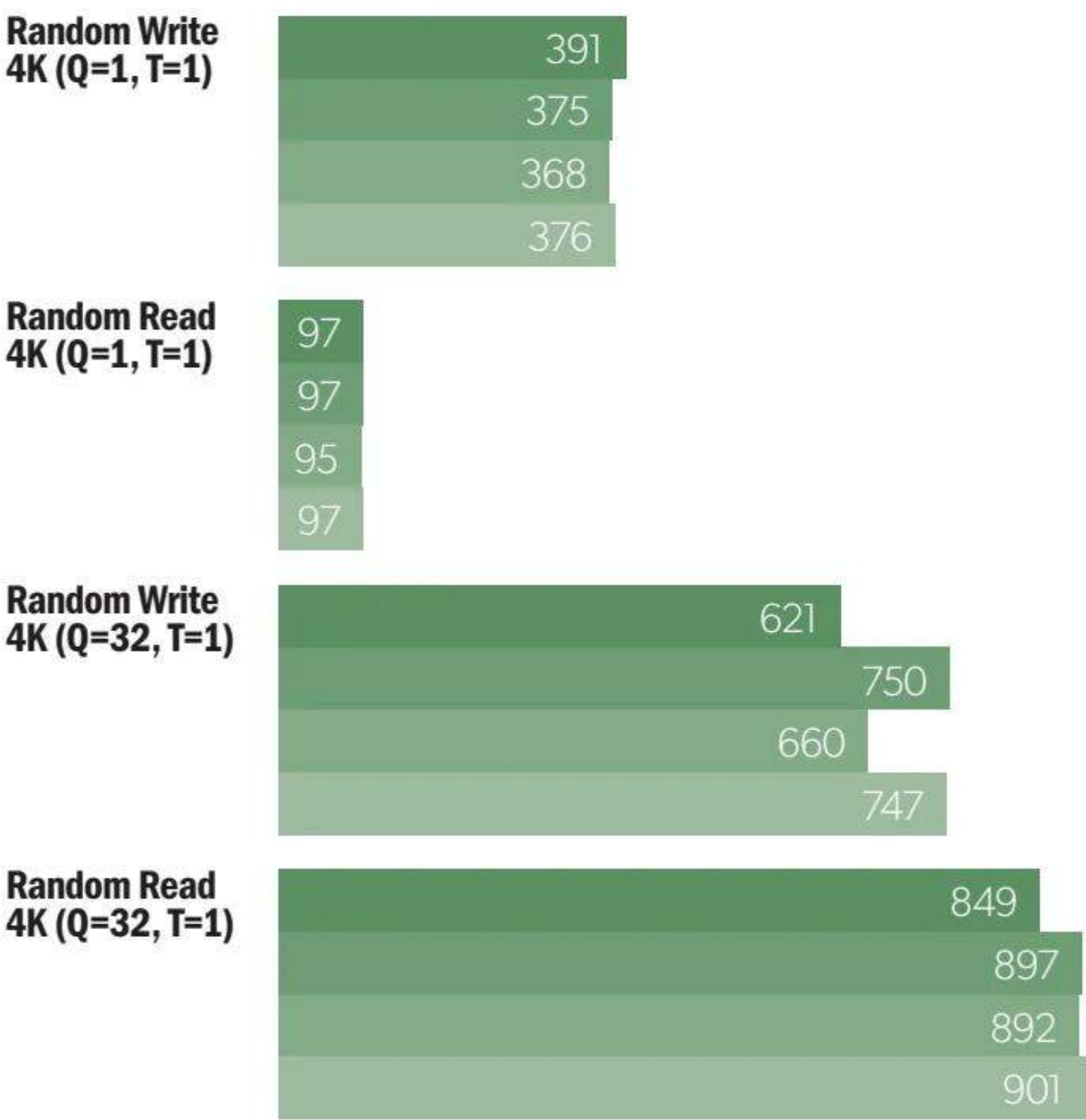
Overall, the 970 Pro was very quick, but the performance was also somewhat uneven. It was a bit slow (for Gen 5) with the 48GB files and hell on wheels with the 450GB file write, mediocre for PCIe 5.0 with single queues, and top-notch when multiple queues were in play. That’s a bit odd, as the 450GB write test, which the drive aced, is a single-queue operation.

Also, I didn’t quite see the 14GBps Adata advertises, though the word through the

CrystalDiskMark 8 4K Performance

MBps

Adata 970 Pro Adata Legend 970
Corsair MP700 Pro Seagate FireCuda 540



LONGER BARS INDICATE BETTER PERFORMANCE

The 970 Pro’s random performance was more balanced, good both with queues and without.

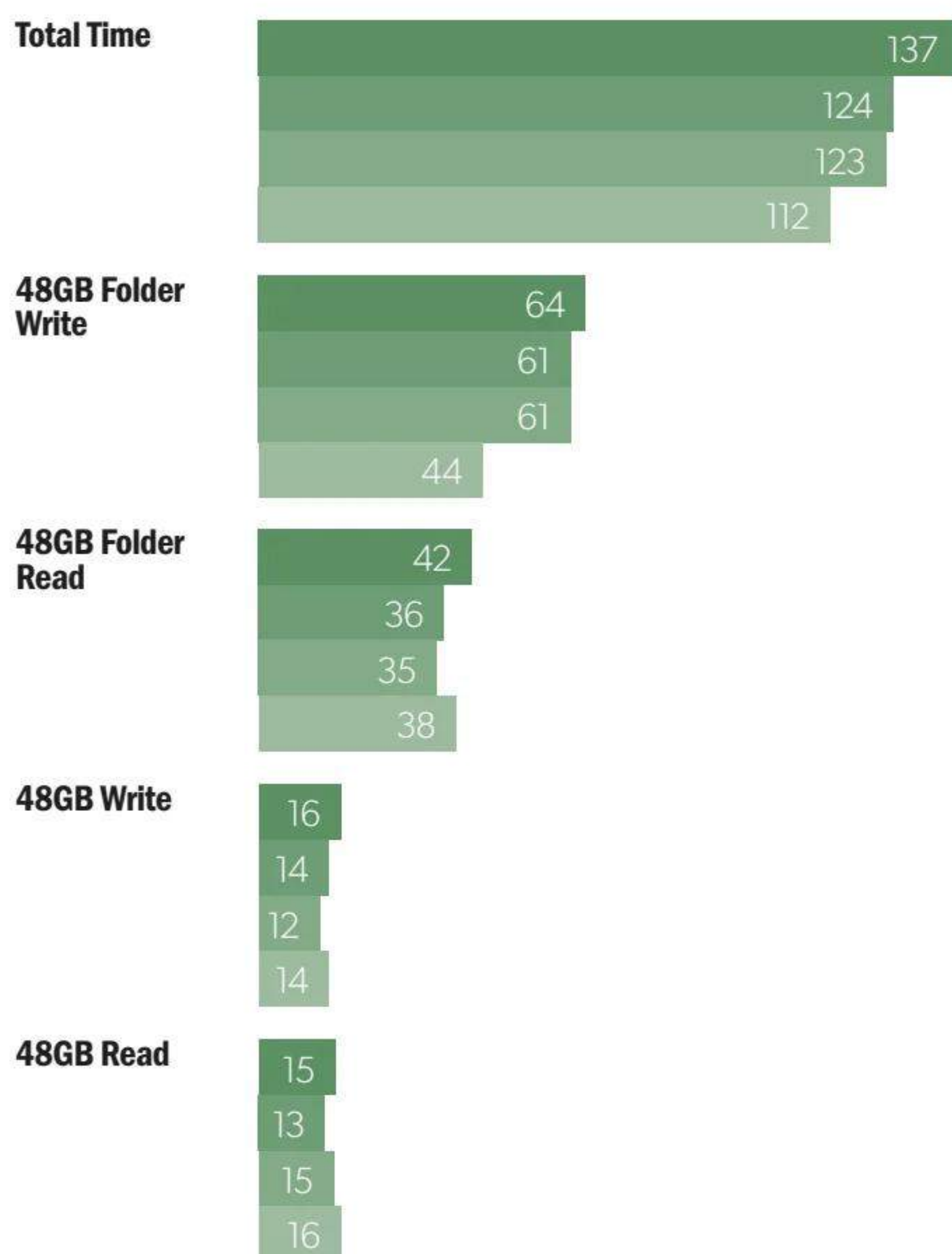
grapevine is that the very latest Intel systems might just deliver that kind of performance.

The 970 Pro’s CrystalDiskMark 8 random performance maintained greater equilibrium—on par with those of the Legend 970 (fave.co/41aPaLV), Corsair MP700 Pro (fave.co/4ah88EM), and Seagate FireCuda 540 (fave.co/3B3mhs0) PCIe 5 competition. In other words, the 4K performance was fast both with queues and without them.

48GB Transfers

Seconds

■ Adata 970 Pro ■ Adata Legend 970
■ Corsair MP700 Pro ■ Seagate FireCuda 540



SHORTER BARS INDICATE BETTER PERFORMANCE

While the 970 Pro wasn't slow in our 48GB transfers, there are a lot of drives that are faster.

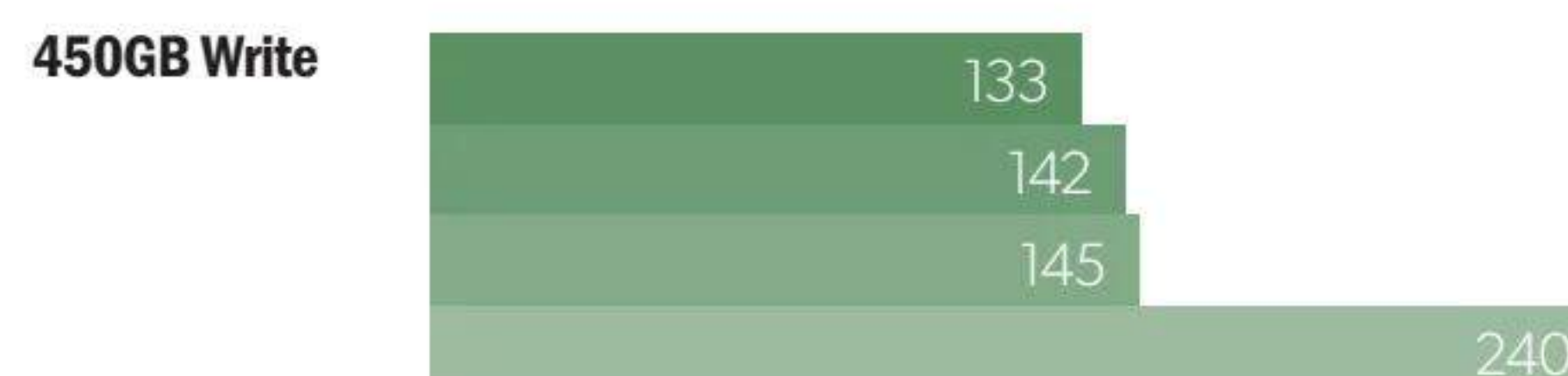
While the 970 Pro wasn't slow in our 48GB transfers, there are a lot of drives that are faster, including some host memory buffer (HMB/DRAM-less) drives.

On the other hand, the 970 Pro had the fastest 450GB write time I had seen at the time of testing, though one SSD has surpassed it since. Regardless, you can hardly complain about a performance of 2 minutes, 13 seconds.

48GB Write

Seconds

■ Adata 970 Pro ■ Adata Legend 970
■ Corsair MP700 Pro ■ Seagate FireCuda 540



SHORTER BARS INDICATE BETTER PERFORMANCE

One of the fastest 450GB write times I've seen.

Overall, the 970 Pro delivers very good performance, especially when a lot of data is being written sequentially. However, it's middle of the top-shelf pack in many areas.

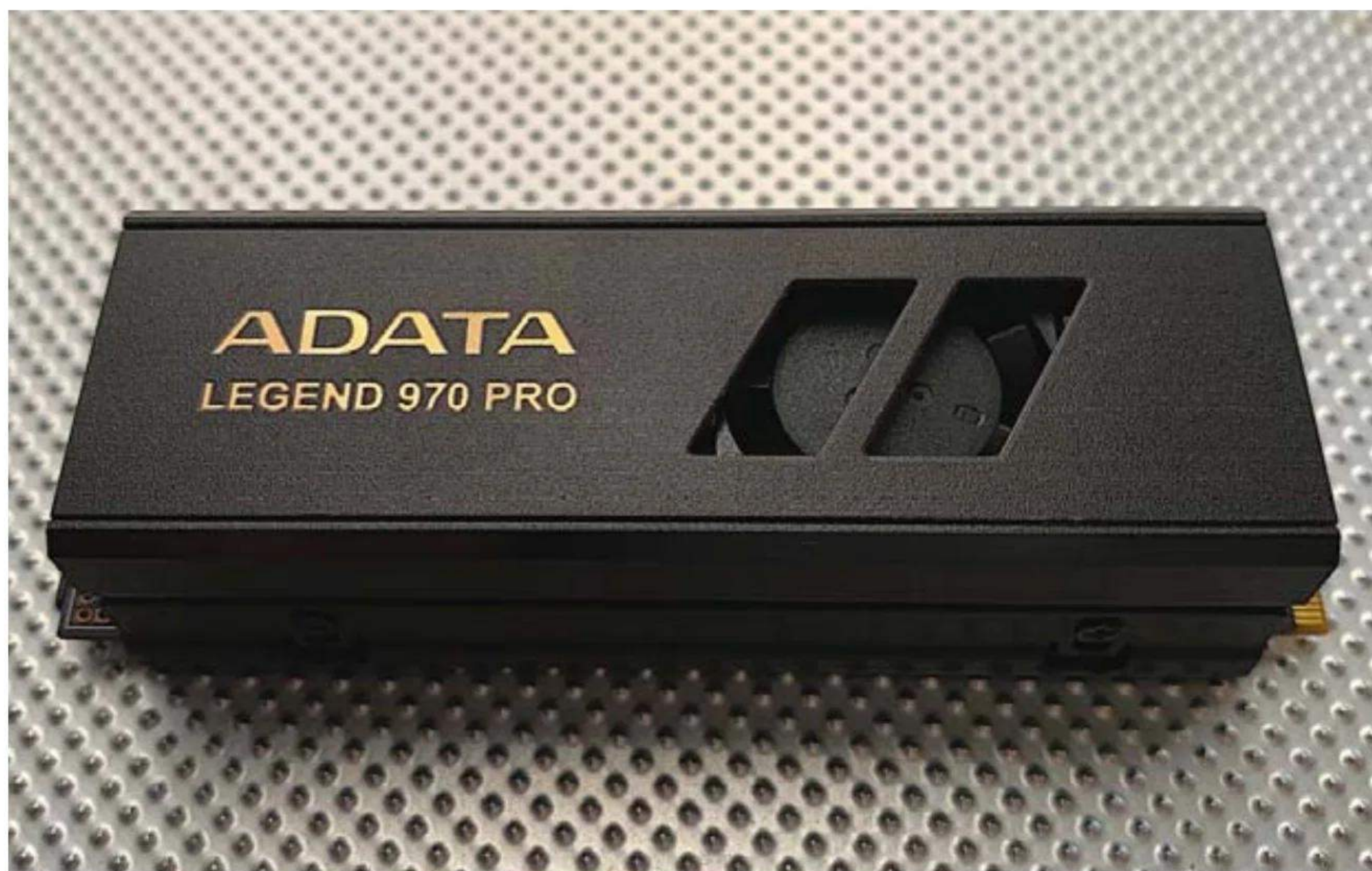
BOTTOM LINE

The Adata 970 Pro is a great drive, but it's competing against similarly priced SSDs that are also great and sometimes even better. Keep in mind that heatsinks generally raise the price of an SSD, so if you don't need one (many motherboards have their own), you can save a few bucks on an alternative purchase.

HOW WE TEST

Drive tests currently utilize Windows 11, 64-bit running on an X790 (PCIe 4.0/5.0) motherboard/i5-12400 CPU combo with two Kingston Fury 32GB DDR5 4800MHz modules (64GB of memory total). Both 20Gbps USB and Thunderbolt 4 are integrated to the back panel and Intel CPU/

The 970 Pro delivers very good performance, especially when a lot of data is being written sequentially.



GPU graphics are used. The 48GB transfer tests utilize an ImDisk RAM disk taking up 58GB of the 64GB of total memory. The 450GB file is transferred from a 2TB Samsung 990 Pro which also runs the OS.

Each test is performed on a newly formatted and TRIM'd drive so the results are optimal. Note that in normal use, as a drive fills up, performance may decrease due to less NAND for secondary caching, as well as other factors. This can be less of a factor with the current crop of SSDs with far faster late-generation NAND.

Caveat: The performance numbers shown apply only to the drive we were shipped and to the capacity tested. SSD performance can and will vary by capacity due to more or fewer chips to shotgun reads/writes across and the amount of NAND available for secondary

caching. Vendors also occasionally swap components. If you ever notice a large discrepancy between the performance you experience and that which we report, by all means, let us know. 

Adata 970 Pro



PROS

- Fastest ever writing our 450GB file.
- Fan-cooled heatsink.
- DRAM cache for fast random performance.

CONS

- Pricey.
- Middling single-queue benchmark numbers for a DRAM design.

BOTTOM LINE

The Adata 970 Pro set a performance record writing 450GB, but was middling (for a PCIe 5.0 DRAM design) in other tests. We love its fan-cooled heatsink and the overall design, which will appeal to gamers.

From \$80



Acer Nitro 14: Proof that gaming laptops don't have to bankrupt you

Gaming laptops don't have to be expensive. **BY CHRIS HOFFMAN**

The Acer Nitro 14 (fave.co/3XINauj) is a gaming laptop that's all about value. I have a soft spot for this type of laptop: Expensive gaming laptops are impressive, but you don't have to spend a lot of money for a great gaming experience. There's something beautiful about any laptop that delivers solid

performance at a low price. But you'll have to accept some compromises to keep the price down.

SPECS

The Acer Nitro 14 includes an eight-core AMD Ryzen 7 8845HS CPU. AMD launched the Ryzen 8000 CPUs (fave.co/49Avowl)

back in December 2023. It's not one of AMD's latest Ryzen AI CPUs ([fave.co/4cpbSEg](#)), which are just rolling out, but it's a solid CPU with reasonable gaming performance, as we'll see in the benchmarks.

The Nitro 14 also includes an Nvidia GeForce RTX 4060 GPU, 16GB of LPDDR5X memory, and a 512 GB solid-state drive. It's a reasonable package for gaming on a budget, but Acer doesn't provide any configuration options: This is the one hardware configuration available.

Since that's the case, it's worth flagging that the 512 GB SSD may be a little on the small side in a world where some games are coming in at over 100 GB each ([fave.co/3MJHXvN](#)). I prefer having some extra space to work with, as the uninstall-a-game-to-make-room shuffle can get annoying.

CPU: AMD Ryzen 7 8845HS

Memory: 16 GB LPDDR5X

Graphics/GPU: Nvidia GeForce RTX 4060

Display: 14.5-inch 1920×1200 IPS display with 120Hz refresh rate

Storage: 512 GB PCIe Gen4 NVMe M.2 SSD

Webcam: 720p webcam

Connectivity: 2× USB Type-C (One USB4 Full Function, one USB 3.2 Gen 2), 2× USB Type-A (USB 3.2 Gen 2), 1×HDMI 2.1, 1×

combo headphone jack, 1× microSD card slot, 1× DC power in, 1×Kensington lock slot

Networking: Wi-Fi 6E, Bluetooth 5.3

Biometrics: None

Battery capacity: 76 Watt-hours

Dimensions: 12.77×10.16×1.03 inches

Weight: 4.4 pounds

MSRP: \$1,299 as tested

DESIGN AND BUILD QUALITY

The Acer Nitro 14 has a classic-looking design. This 14.5-inch laptop is all black—except for the silver Nitro logo on the lid and below the screen and the orange plastic fins on the back of the machine. It's a little chunky, but not hugely so. At 4.4 pounds, it's on the heavy side compared to some other 14-inch gaming laptop.

This laptop's chassis is made entirely out of plastic. There are no metal components here, as there are on some more expensive



The Acer Nitro 14 has a classic-looking design.

laptops. That's one of the ways Acer is keeping costs down.

While plastic doesn't feel as "premium" to the touch as metal, the build quality feels good and sturdy. There's no weird flex to the laptop's chassis. The hinge action is particularly solid and smooth, and it's easy to open the laptop with a single hand.

The laptop's cooling system also works well. Hot air is directed out both sides of the laptop, as well as the back. While gaming, the hot air spraying out the sides of the laptop wasn't particularly intense, and it wasn't annoying on my mouse hand—a problem many other gaming laptops do have.

The Acer Nitro 14's keyboard deck does get a little hot while running intensive games, but not unusually so. However, most of the heat stays in the middle of the keyboard. The WASD area's temperature stayed very reasonable to the touch.

KEYBOARD AND TRACKPAD

The Acer Nitro 14 includes a full-size keyboard with three zones of LED backlighting. Out of the box, the keyboard is configured to animate between different colors, and it looks great if you're a fan of the rainbow LED gamer aesthetic. (Of course, you can configure the backlight however you like).



The full-size keyboard has three zones of LED backlighting.

Like many other parts of this laptop, the keyboard feels fine. It's not an unusually snappy keyboard, and you won't rave about it to anyone. But the keys are responsive. While the action feels mushy, it doesn't feel bad. It's fine. It won't slow you down when typing or gaming. You aren't going to get the best key feel on a value-focused gaming laptop.

I'm a fan of the full-size arrow keys on the keyboard—no half-height arrow keys here, as you see on many modern laptops. There's also a dedicated NitroSense key that launches the Acer NitroSense software, where you can change power profiles on the laptop. At the top-left corner of the keyboard, there's a Turbo button that overclocks the hardware and turns the fans to maximum when you press it. (Also, there's a Copilot key to open Microsoft's AI chatbot.)

The trackpad on this machine is a good size, and the palm rejection worked well while I was gaming. It's reasonably smooth to glide your finger over it, but it is made of plastic—a good glass touchpad feels much nicer. I'm not a huge fan of the click-down feeling on the touchpad, which doesn't feel as crisp and responsive as the ones on some more expensive machines. Like some other aspects of this machine, it's usable—but not great.



The display is fine, but there are better options out there.

DISPLAY AND SPEAKERS

The Acer Nitro 14's display isn't the highest-resolution or brightest display you'll find. At 14.5 inches with a 1920×1200 resolution, it's well paired to provide good gaming performance with the Nvidia GeForce RTX 4060 GPU. The 120Hz refresh rate and 3ms response rate are solid, the colors look good, and the display also uses Nvidia G-Sync to reduce tearing.

It's a dim display, though. At just 300 nits of brightness, this is unusually dim. When I review a gaming laptop with display with 400 nits of brightness, I note that *those* are on the dim side. This laptop has a display that's 25 percent dimmer than the average dim screen.

Whether this matters depends on your taste and how you'll be using the laptop. If there will be sunlight falling on the screen, you'll definitely notice the low maximum

brightness. But if you'll be using the laptop indoors in a darker room, you may be fine with its brightness.

You'll find laptops with higher resolution displays, OLED screens, 144Hz or faster refresh rates, and more brightness elsewhere. But they'll often be more expensive.

The Acer Nitro 14's display doesn't look bad. It's perfectly serviceable. But if you're considering spending more money on a gaming laptop, you can get a laptop with a better display.

The integrated speakers are nothing to write home about. There's a real lack of bass—laptop speakers in general lack bass, but these really do. They don't get particularly loud, but they do get loud enough. They don't have notably crisp audio or a wide soundstage. But they're here, and they worked, and I happily gamed with them. At

this price point, that's fine—especially since most gamers will prefer plugging in a headset (fave.co/3pin6Eh) or external speakers (fave.co/3LcGmLP), anyway.

WEBCAM, MICROPHONE, BIOMETRICS

The Acer Nitro 14's webcam is a compromise. It's a 720p webcam, so it looks noticeably grainy compared to the 1080p webcams that are becoming standard on many modern laptops. It works, but this isn't the ideal machine for videoconferencing—although you can always plug in a USB webcam (fave.co/3LZ3Gjk), if you like. This machine does come with Windows Studio Effects, a package of AI effects with features like blurring your background and forcing eye contact, which is nice.

The three-microphone array also doesn't sound particularly impressive, despite the AI-based "Acer Purified Voice" technology. It did a good job of picking up my voice, but it wasn't with the highest sound quality. I recommend an external headset or USB microphone, especially for voice chatting while gaming—but that's a good idea on any gaming laptop, anyway. Both the microphone and webcam are certainly usable in a pinch.

The Acer Nitro 14 also doesn't include any biometric hardware. You won't be able to sign in with your fingerprint or facial recognition. You'll be entering a PIN or

typing your password instead. It would be more convenient to have at least one biometric option for Windows Hello.

CONNECTIVITY

The Acer Nitro 14 features a decent selection of ports. On the left side, it provides a USB Type-C port (USB4 Full function), a USB Type-A port (USB 3.2 Gen 2), a combo audio jack, a DC power-in jack, and a Kensington lock slot.

On the right side, the Nitro includes a USB Type-C port (USB 3.2 Gen 2), a USB Type-A port (USB 3.2 Gen 2), an HDMI 2.1 port, and a microSD card slot.



Acer provides a decent selection of ports.

That’s a good selection of ports, complete with two USB-C ports and two USB-A ports, one of each on each side. Some budget gaming laptops would have cut a few of these ports to save some money. The only thing potentially missing is an Ethernet port for wired networking, but of course you could use a dongle (fave.co/30z4JBG) for that.

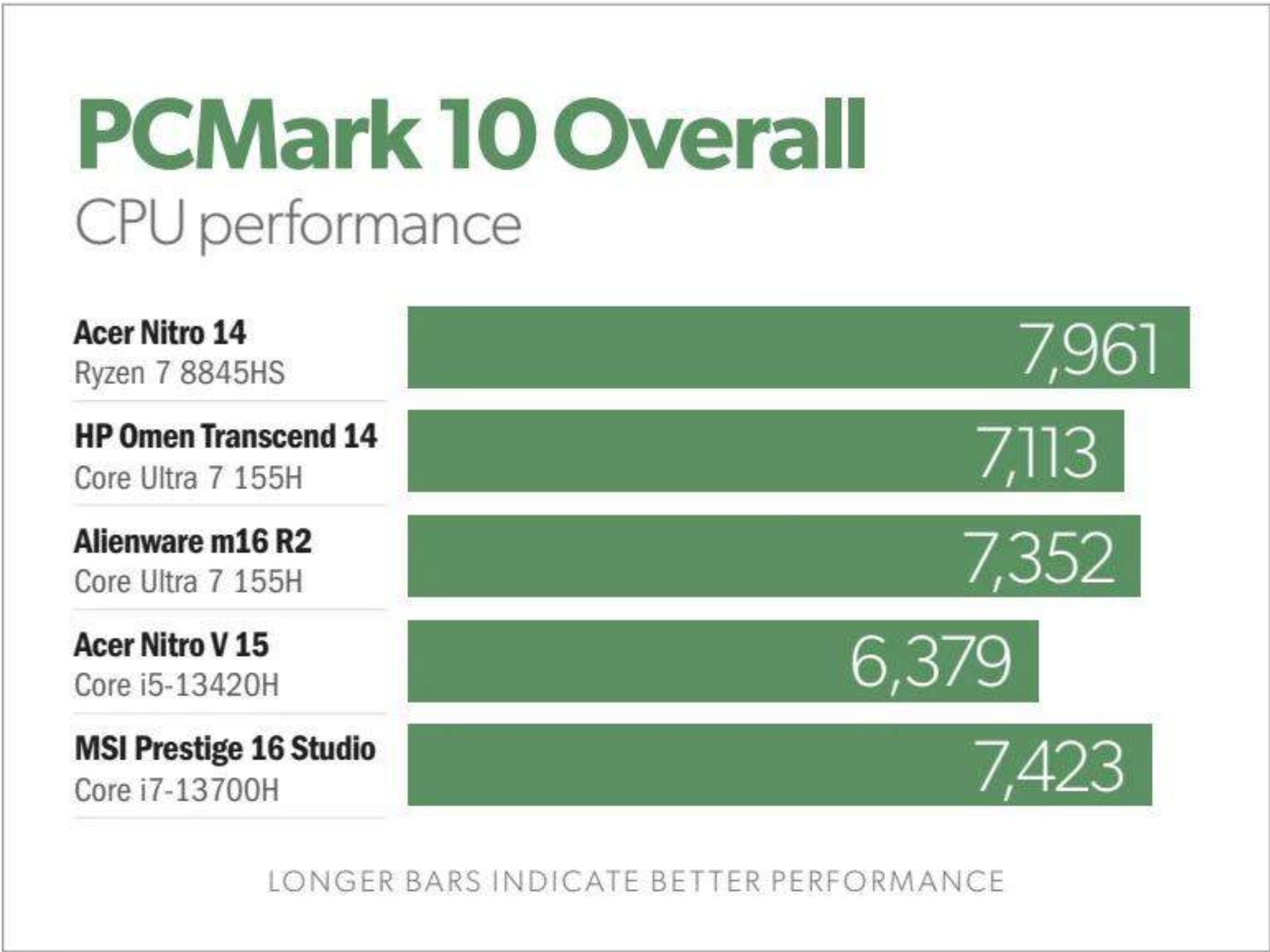
For wireless networking, this laptop provides Wi-Fi 6E and Bluetooth 5.3. The Wi-Fi worked well—and while it would be nice to see Wi-Fi 7, this laptop is right at a cutoff point. The next generation of laptops look like they’ll have it as a standard feature. For the price, the lack of Wi-Fi 7 hardware (fave.co/3rPd820) is totally understandable. You probably won’t have a Wi-Fi 7 router yet, anyway.

PERFORMANCE

The Acer Nitro 14 delivered solid gaming performance with its AMD Ryzen 7 8845HS CPU, Nvidia GeForce RTX 4060 GPU, and 16 GB of RAM. The cooling system did a good job, with the laptop’s keyboard staying at a reasonable temperature—especially around the WASD keys.

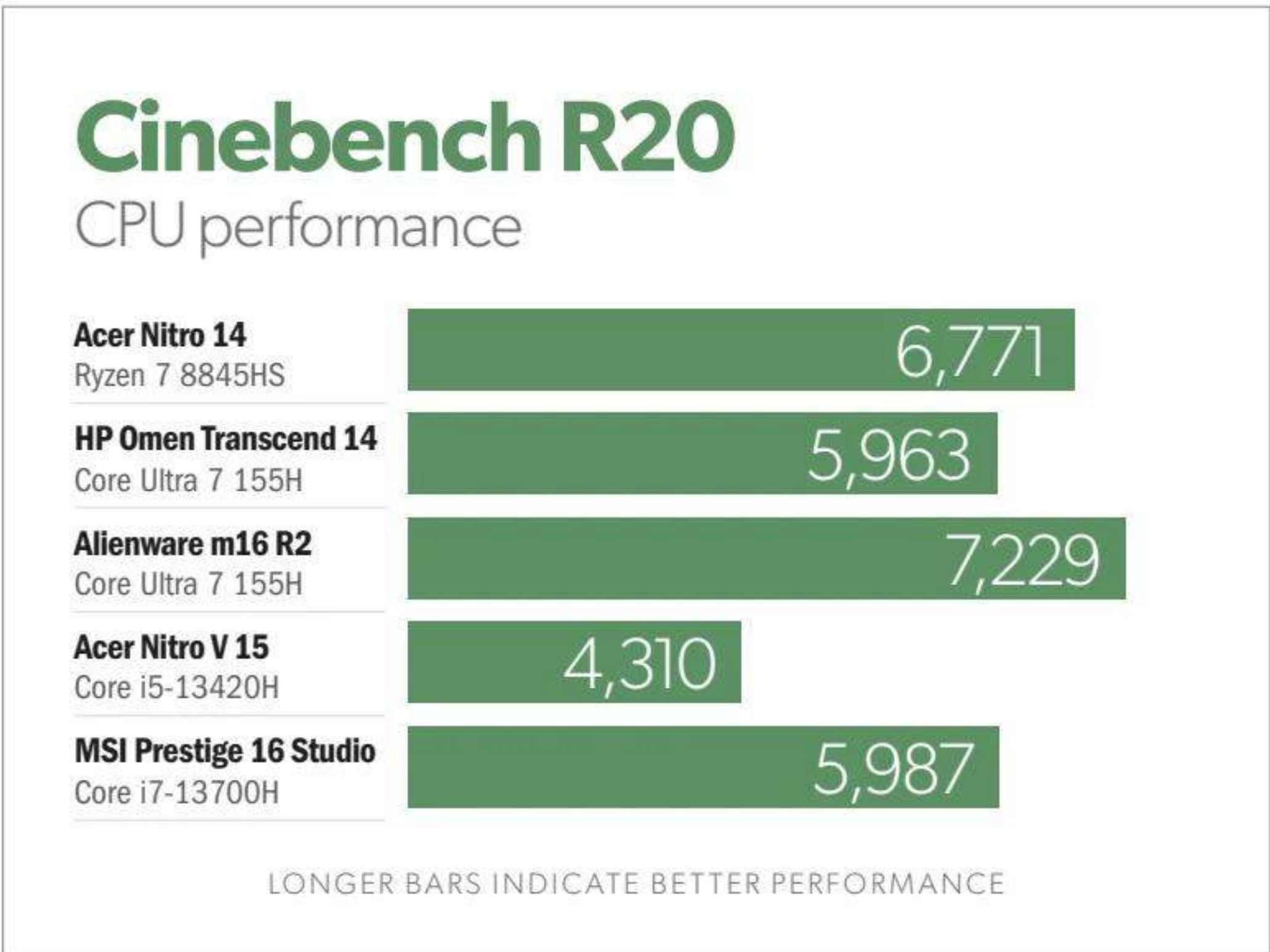
As always, we ran the Acer Nitro 14 through our standard benchmarks (fave.co/4cjKcl4) to see how it performs.

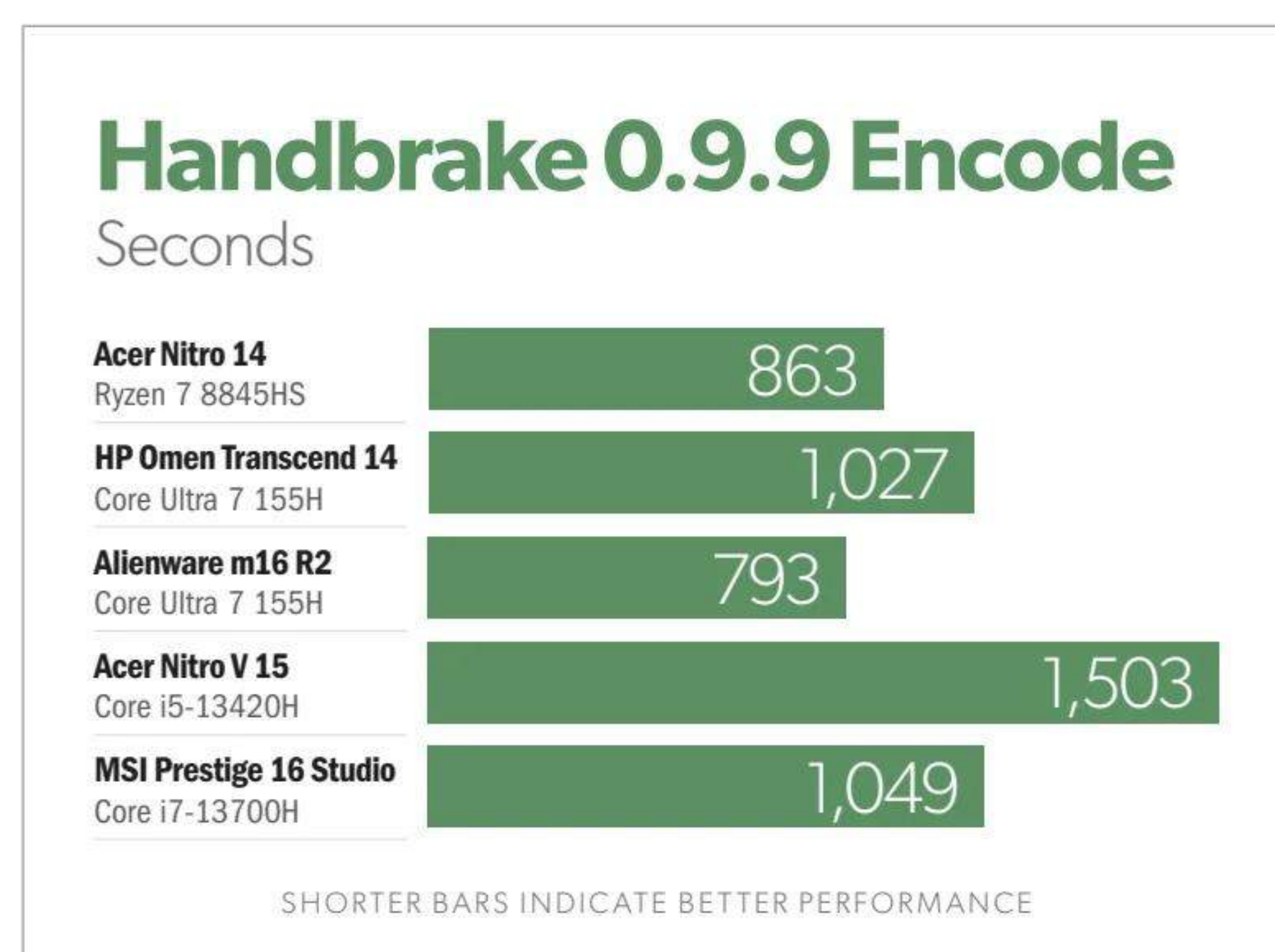
First, we run PCMark 10 to get an idea of overall system performance. While this benchmark is designed to measure performance holistically, the CPU’s performance is a huge factor.



With a PCMark 10 overall score of 7,961, the Acer Nitro 14 exceeded similarly specified laptops we compared it to on this benchmark, including the HP Omen Transcend 14 (fave.co/4b1BbeF) and Alienware m16 R2 (fave.co/3UkuBur).

Next, we run Cinebench R20. This is a heavily multithreaded benchmark that focuses on overall CPU performance. It’s a pretty quick benchmark, so cooling under extended workloads isn’t a factor. But since this test is heavily multithreaded,



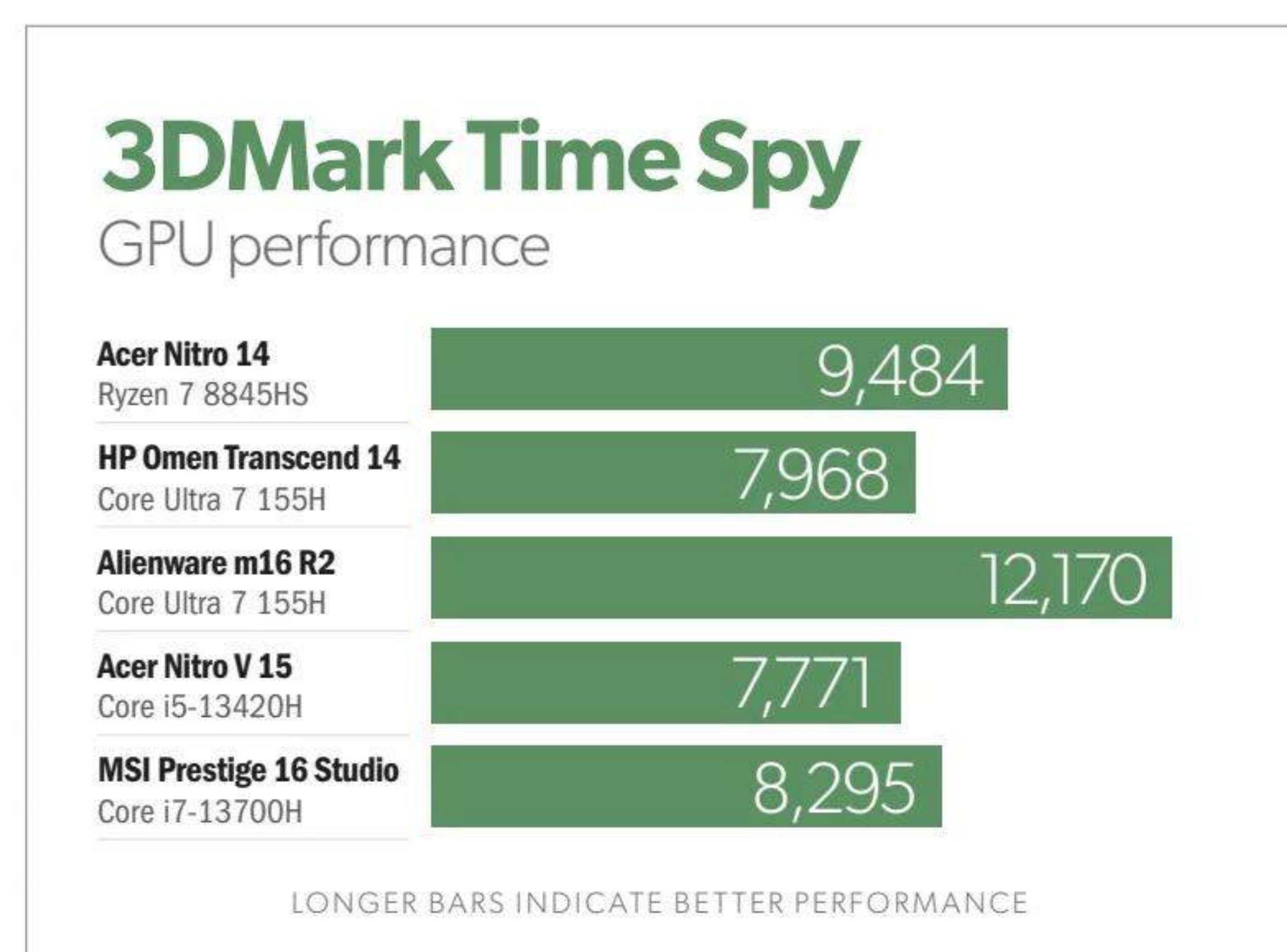


CPUs that have more cores possess a huge advantage.

The Acer Nitro 14 achieved a score of 6,771 on the multithreaded Cinebench R20 benchmark. That's a good score and exceeded those of most of the other PCs we compared it to here. The Alienware m16 R2, with its Intel Core Ultra 7 155H CPU, did beat it. That's no surprise as that Intel CPU has 16 cores, while this AMD CPU has eight cores.

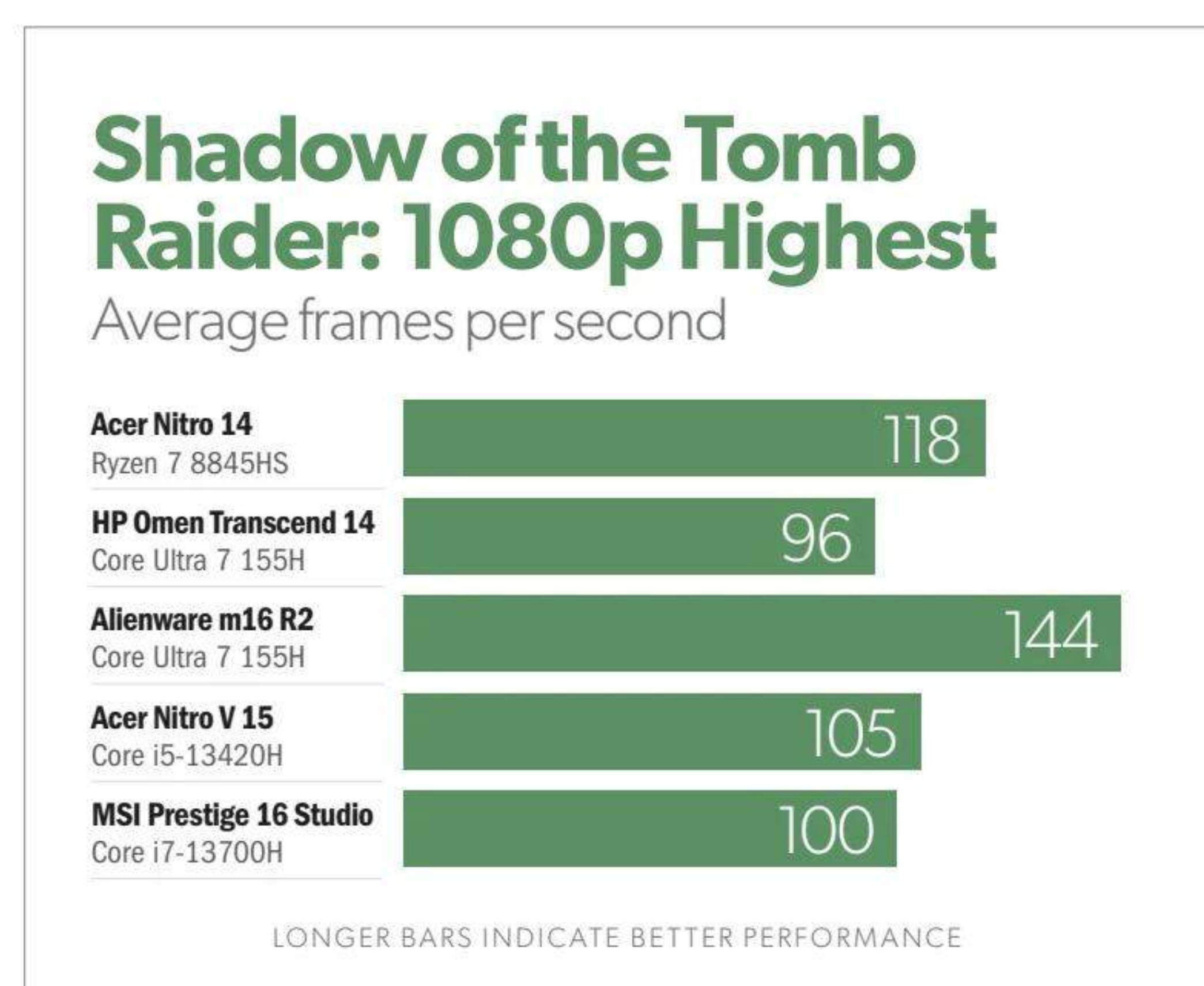
We also run an encode with Handbrake. This is another heavily multithreaded benchmark, but it runs over an extended period. This demands the laptop's cooling to kick in, and many laptops will throttle and slow down under load.

The Acer Nitro 14 finished the encode process in 863 seconds, or just under 14.5 minutes. That was a better score than most other laptops we compared it to—though, again, the Alienware m16 R2 pulled ahead. (That machine is 50 percent more expensive than the Acer laptop here, though).



Next, we run graphical benchmarks. First, we run 3Dmark Time Spy, a graphical benchmark that focuses on GPU performance. With a score of 9,484, the Acer Nitro 14 again delivered excellent performance even compared to other RTX 4060-powered laptops. It was exceeded only by a laptop with a more expensive RTX 4070 GPU.

After that, we run the benchmarks built into a few games. First, we use the built-in benchmark in *Shadow of the Tomb Raider* to



Metro Exodus: 1080p Extreme; no RT

Average frames per second



LONGER BARS INDICATE BETTER PERFORMANCE

test all the gaming laptops we review. It’s an older game, but it’s a great way to compare graphical performance across different PCs.

With an average of 118 frames per second in the *Shadow of the Tomb Raider* benchmark, the Acer Nitro 14 again delivered excellent performance—especially for a laptop with RTX 4060 graphics.

Finally, we run the built-in benchmark in *Metro Exodus*. This is a more demanding game, and we set the benchmark to 1080p resolution at the Extreme detail setting.

The Nitro 14 delivered an excellent score of 37 frames per second in the benchmark. Again, that’s on the high end compared to other RTX 4060-powered laptops.

Overall, the Acer Nitro 14 delivers excellent performance in games—especially for the price. The CPU performs well, and this laptop gets a lot of performance from its RTX 4060. With a little extra thickness, this machine likely has the thermal room to push

the hardware harder. Naturally, you will see better performance on laptops with higher-end GPUs like the Nvidia GeForce RTX 4070 and 4080, but those will cost you extra.

BATTERY LIFE

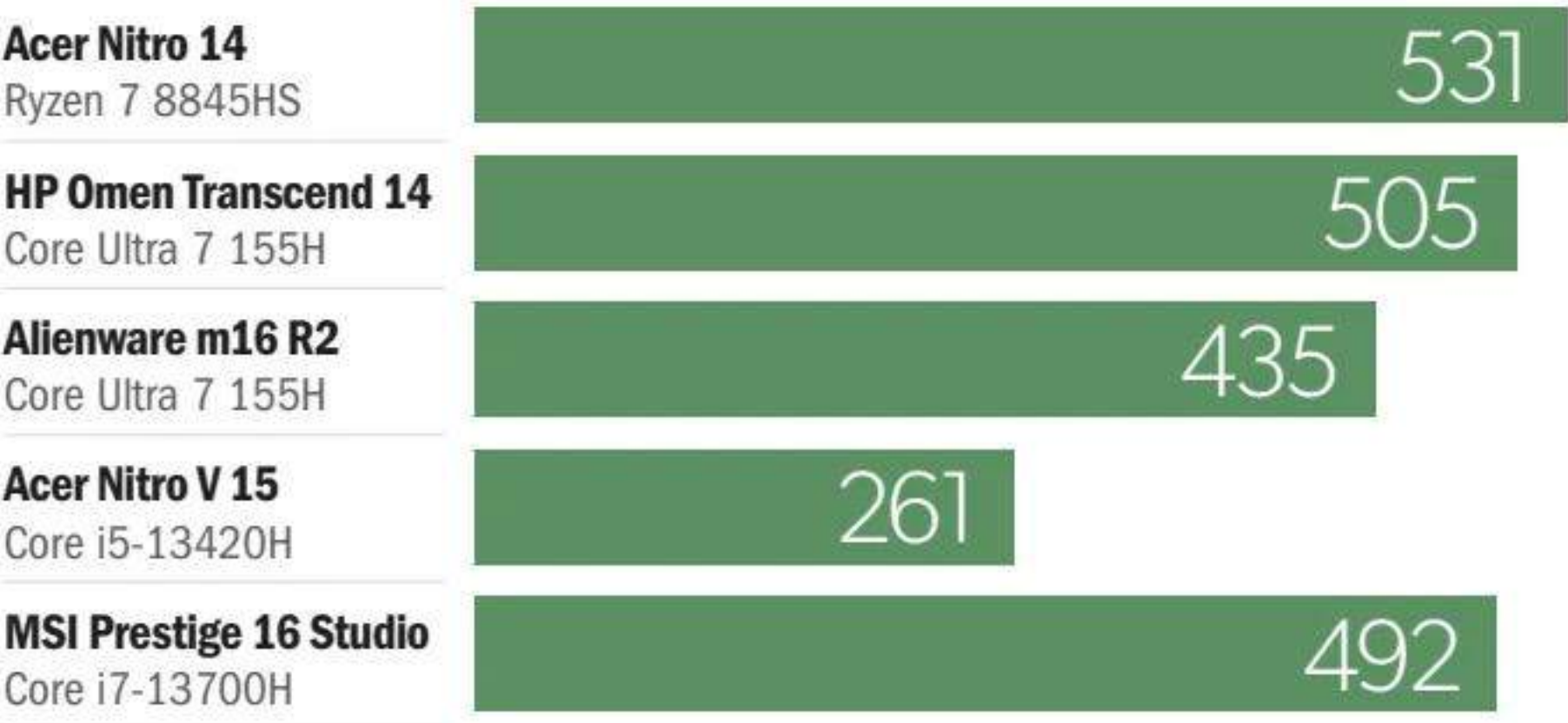
The Acer Nitro 14 includes a 76 Watt-hour battery. You can find gaming laptops with larger batteries, but they’ll add some weight—and cost.

To benchmark the battery life, we play a 4K copy of *Tears of Steel* on repeat in the Movies & TV app on Windows 11 with airplane mode enabled until the laptop suspends itself. We set the screen to 250 nits of brightness for our battery benchmarks. This is a best-case scenario for any laptop since local video playback is so efficient, and real battery life in day-to-day use is always going to be less than this.

The Acer Nitro 14 lasted an average of 531 minutes in our standard battery life benchmark. That’s nearly 9 hours. It’s more

Battery Life

Minutes



LONGER BARS INDICATE BETTER PERFORMANCE



The Acer Nitro 14 offers great performance for the price.

runtime than the other laptops we're comparing it against: AMD CPUs tend to get better battery life than similar Intel CPUs, in my experience. Perhaps that will change with Intel's Lunar Lake hardware.

Bear in mind that you'll get substantially less than our benchmarked 9 hours of battery life in the real world. You can use this laptop away from an outlet for a few hours, but you won't get all-workday battery life.

It's also worth noting that gaming laptops don't deliver their serious gaming performance unless they're plugged in, anyway. You'll want to plug in any gaming laptop when playing anything but the lightest games.

BOTTOM LINE

The Acer Nitro 14 offers great performance for the price. It's a solid deal compared to other 14-inch gaming laptops with RTX 4060

hardware, like the Asus ROG Zephyrus G14 (fave.co/3XGANi4) and HP Omen Transcend 14 (fave.co/4b1BbeF). The Acer Nitro 14 costs hundreds of dollars less than those machines.

I love seeing high-performing budget gaming laptops around the \$1,000 mark. You don't need the fanciest, most expensive laptop to have a great gaming experience, and this machine proves it.

You do have to make some compromises, and you'll find features like OLED screens, all-metal construction, snappier keyboards, and higher-resolution webcams on more expensive machines. But if your main priorities are speedy gaming performance at a low price, this machine is a good value. 🔌

Acer Nitro 14



PROS

- Great gaming performance.
- A good value.
- Decent battery life.

CONS

- Dim display.
- Keyboard is on the mushy side.
- No biometric login support.

BOTTOM LINE

The Acer Nitro 14 delivers great RTX 4060-powered gaming performance at a low retail price. This machine makes many compromises to keep the price down, but they're all reasonable.

From \$1,299

MSI MPG 341CQPX: A gorgeous gaming ultrawide with USB-C

Yet another QD-OLED ultrawide—but one that distinguishes itself with some nice improvements. **BY MATTHEW S. SMITH**



PCWorld
EDITORS'
CHOICE

The flood of ultrawide monitors with a Samsung QD-OLED display panel has turned into a tsunami. Every monitor maker has at least one, and many have several. However, the new MSI MPG

341CQPX floats atop this deluge with several features that few, if any, competitors offer. That includes a 240Hz refresh rate and a USB-C port with 98 watts of Power Delivery. The MPG 341CQPX isn't perfect, but its advantages are notable.

SPECS AND FEATURES

At a glance, the MSI MPG 341CQPX's specifications look a lot like those of competitive QD-OLED monitors. It's a 34-inch panel with a resolution of 3440×1440, it supports Adaptive Sync, and it has a wide variety of ports, including USB-C.

Display size: 34-inch ultrawide 21:9 aspect ratio

Native resolution: 3440×1440

Panel type: QD-OLED

Refresh rate: Up to 240Hz

Adaptive Sync: Adaptive Sync

HDR: VESA DisplayHDR 400 certified

Ports: 2× HDMI 2.1, 1× DisplayPort 1.4, 1×USB-C with DisplayPort Alternate Mode and 98 watts of Power Delivery, 1× USB-B upstream, 2× USB-A downstream, 1× 3.5mm audio out

VESA mount: 100×100mm

Speakers: No

Price: \$899.99 MSRP, \$849.99 typical retail

However, the MSI has some advantages. It has a refresh rate of 240Hz, which is at the upper end of what's available from OLED monitors right now, and uncommon in QD-OLED monitors. It also has a USB-C port with 98 watts of power delivery, which is more than many competitors offer.

Despite this, it's reasonably priced with an MSRP of about \$900.

Shoppers be warned: MSI's branding is a little confusing. It has an older monitor, the MSI MAG 341CQP, which looks similar and currently comes up in search results for the MSI MPG 341CQPX. Double-check the listing and the model number of the monitor.

DESIGN

The MSI MPG 341CQPX's design is its weakest trait, though that's not to say it's bad. The panel itself is a competent effort. From the front, the monitor has slim bezels on three sides and a small chin on the bottom. Turn it around and you'll find an expanse of black plastic that feels sturdy. It's broadly similar to the Gigabyte MO34WQC (fave.co/3zlu1oD), but I think the MSI MPG 341CQPX looks a tad more expensive.



From the front, the monitor has slim bezels on three sides and a small chin on the bottom.

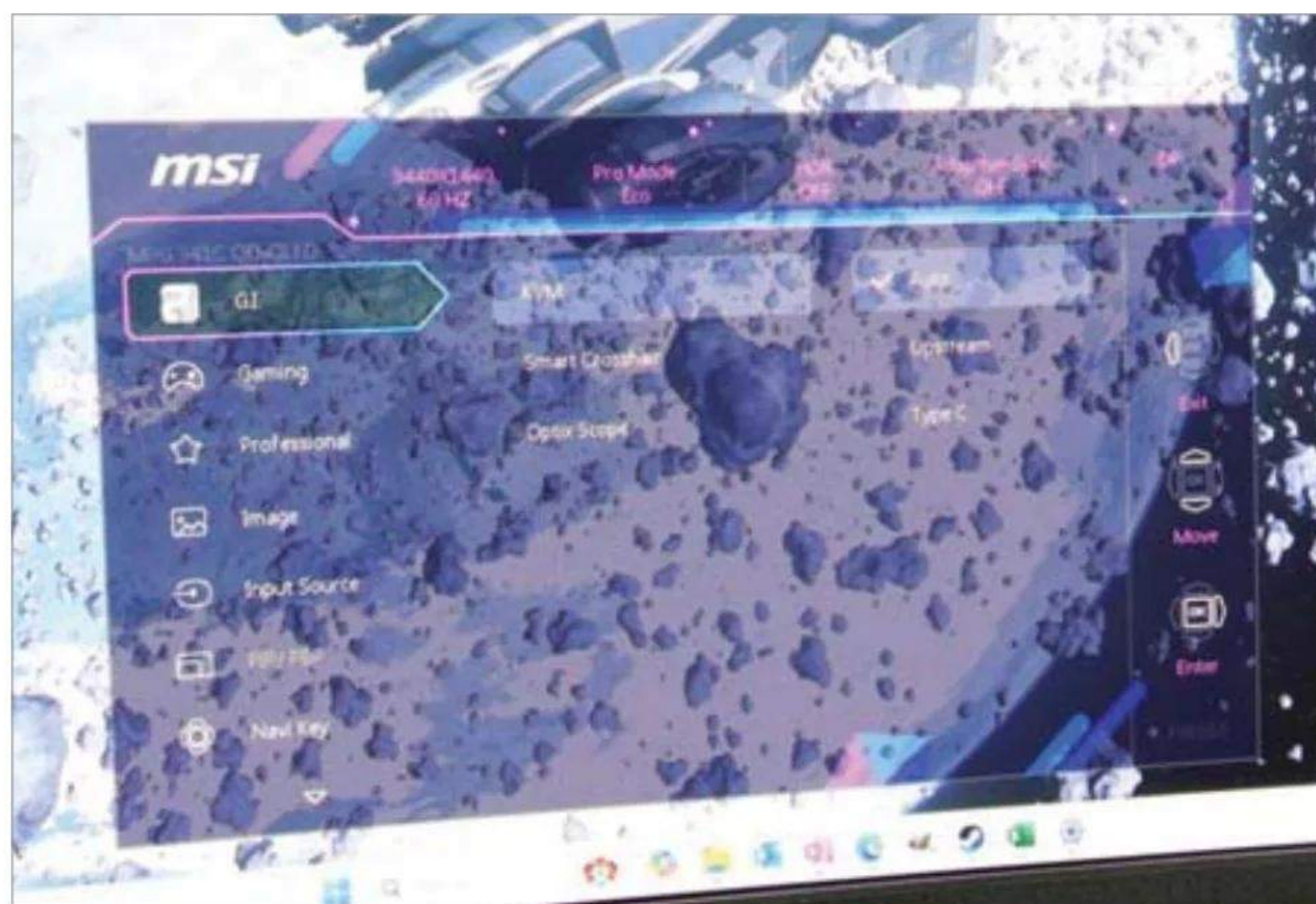
With that said, the MPG 341CQPX lags alternatives like the Alienware AW3423DWF (fave.co/3bTPB8b), LG Ultragear 34GS95QE, or Samsung Odyssey G85SB. Those competitors have a more premium and professional look that's a better fit for most desks.

The MPG 341CQPX also lacks RGB lighting. Personally, I don't mind this, but most competitors that brand their products as a gaming monitor offer some form of RGB lighting. Shoppers looking to add some flair to their desk might miss it.

MSI also makes the mistake of opting for a gigantic stand. It's nearly as wide as the monitor itself and a bit deep, which makes the monitor hard to fit on a small or shallow desk. While the broad stand gives the MPG 341CQPX a racy look, it also means you can't use some of the space it occupies like, well, a desk. Also, to nitpick: I don't think the stand base looks like it goes with the monitor. It's more spindly, and it's a different color, which seems odd. A 100×100mm VESA mount is available, though, so the stand's problems can be solved with a third-party monitor stand or arm (fave.co/47xeUp0).

CONNECTIVITY AND MENUS

The MSI MPG 341CQPX has an excellent range of connectivity for a 34-inch ultrawide gaming monitor.



MSI's menus are logically arranged and well labeled, and include many image quality customization options.

Video connectivity includes two HDMI 2.1 ports, one DisplayPort 1.4, and one USB-C with DisplayPort Alternate Mode. MSI officially states that all of these ports support the monitor's full resolution and refresh rate. The same is true of most 34-inch ultrawides, because 3440×1440 resolution isn't especially high for a monitor in 2024. Still, it's good to see.

The USB-C port also handles up to 98 watts of USB Power Delivery. That's important, because it provides enough power to fully supply most Windows laptops designed to be charged over USB-C. Competitors like the Gigabyte MO34WQC have less power delivery. Others, like the Alienware AW3423DWF and LG Ultragear 34GS95QE-B, don't have USB-C at all.

MSI's menu system is accessed with a responsive joystick control centered on the

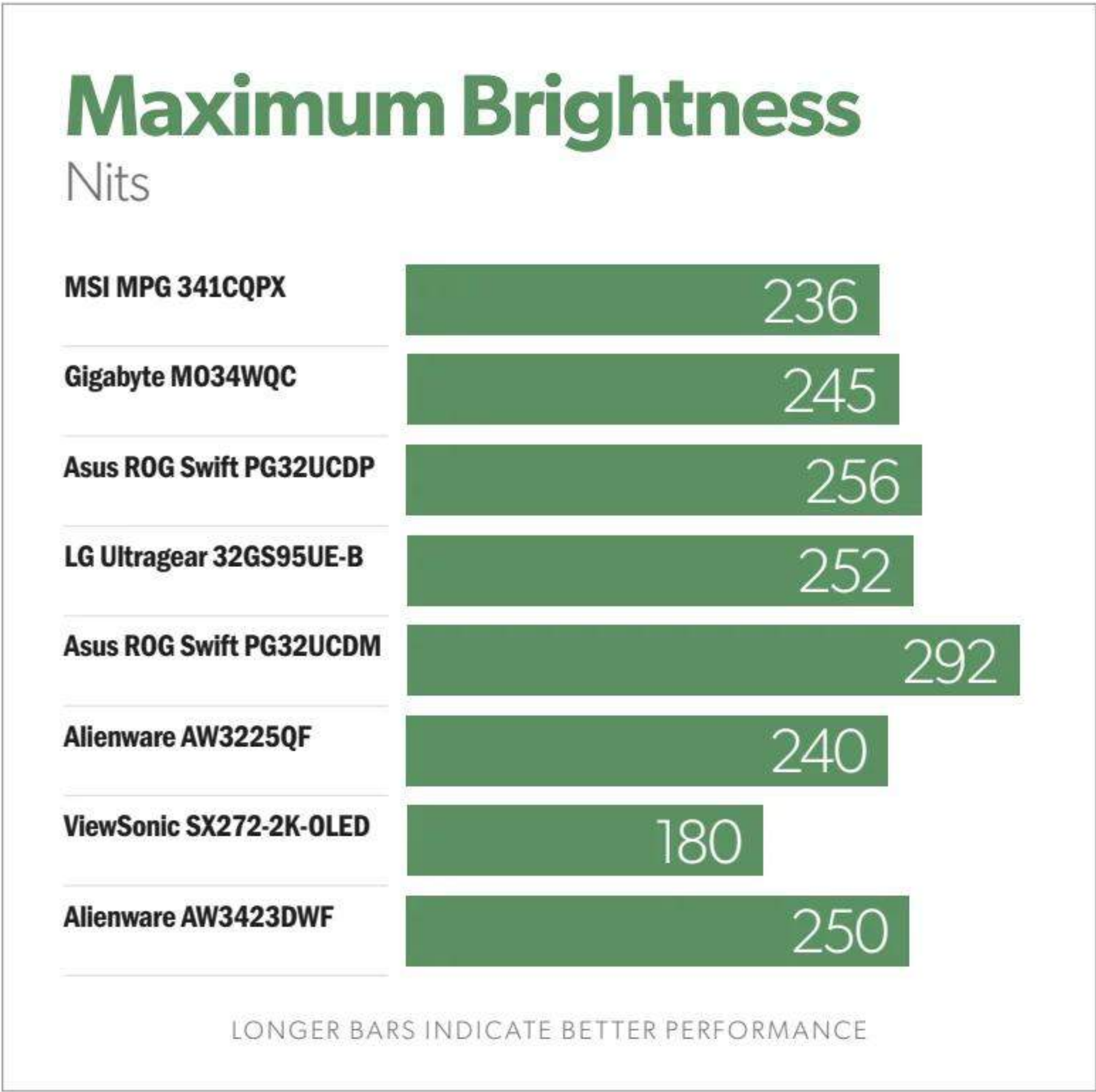
bottom panel. It's easy to use, and MSI's menus are logically arranged, are well labeled, and include many image quality customization options. This includes the usual gaming-centric features, like a black equalizer and on-screen crosshair, as well as utility features like picture-in-picture and picture-by-picture modes. MSI also has a Windows application that can be downloaded from the company's website and used to control the monitor's features. These features are typical for a monitor in the MPG 341CQPX's price range, but they worked well in my experience.

Speakers are absent, however, so you'll need to connect external speakers or headphones. This, too, is typical for a monitor in this category, but not universally true, as competitors like the Gigabyte MO34WQC include speakers.

IMAGE QUALITY

The MSI MPG 341CQPX is the first monitor I've reviewed with a QD-OLED panel that can achieve a refresh rate of 240Hz. Others, like the new Acer Predator X34, will arrive soon. OLED monitor communities are referring to this as a "gen 2.5" panel (the official specifications make no such claim). The new MSI does have some advantages in HDR performance and motion clarity. When it comes to SDR performance, however, not much has changed.

First up is brightness, and there are no surprises here. The MSI MPG 341CQPX's



sustained SDR brightness is arguably a little low compared to other OLED monitors, but not by a meaningful amount.

In general, the MPG 341CQPX's brightness is fine for a room with light control, and in fact I often used it at a brightness level far below its maximum. However, it could appear a bit dim in an extremely bright room, such as one with floor-to-ceiling sunlit windows. In that case, you might want to look at a monitor that relies on different panel technology, such as a Mini-LED ([fave.co/4aiTHAa](#)) monitor.

Let's be real: It is getting to the point where I'm not sure a contrast graph needs to be included in an OLED monitor review. OLED monitors almost always have an effectively infinite contrast ratio, meaning they can achieve a minimum luminance of zero nits. The MPG 341CQPX can deliver an

Contrast Ratio

50% brightness



LONGER BARS INDICATE BETTER PERFORMANCE

exceptionally deep and immersive image that’s far superior to that of an LCD monitor—but so can the competition.

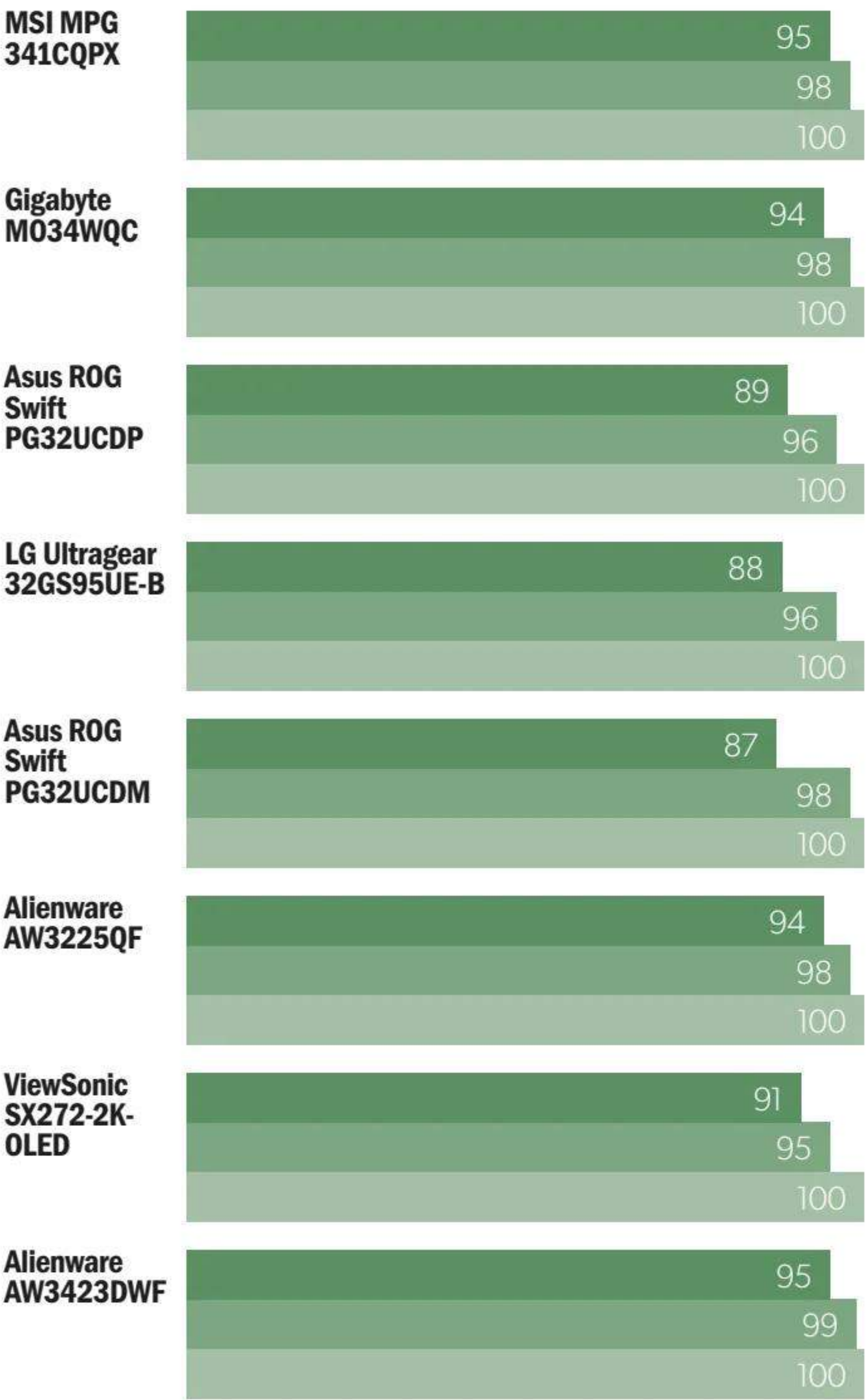
Color gamut, on the other hand, does demonstrate differences between OLED panel technologies.

The MPG 341CQPX has a Samsung QD-OLED panel. The QD stands for quantum dots, a technology that improves the color gamut. Thanks to that, the 341CQPX can show a brilliant range of colors that cover 98 percent of DCI-P3 and 95 percent of AdobeRGB. It’s beautiful and vibrant.

That’s also true of other QD-OLED monitors like the Gigabyte MO34WQC and Alienware AW3225QF. However, monitors such as the LG Ultragear 32GS95UE-B instead use an LG WOLED panel, which has a narrower (yet still excellent) color gamut.

Color Gamut

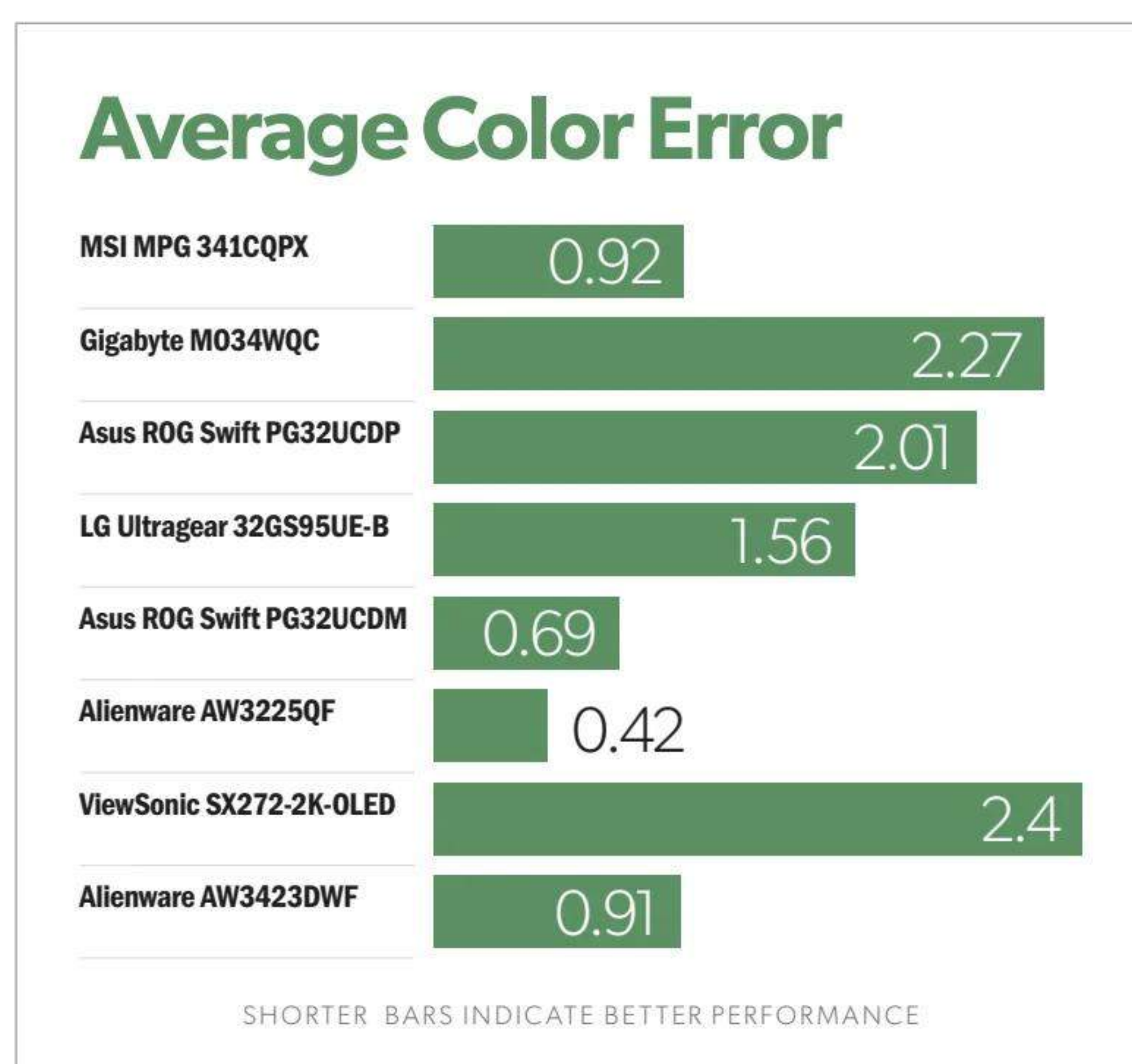
Series 3 Series 2 Series 1



LONGER BARS INDICATE BETTER PERFORMANCE

Truth be told, this difference doesn’t matter much in PC games or movies, which will look vibrant on both QD-OLED and WOLED monitors. But if you’re a creator who wants the widest gamut possible, QD-OLED monitors like the MPG 341CQPX have the edge.

Color accuracy is also a strength for the MPG 341CQPX. Though it doesn’t have the lowest color accuracy we’ve measured, it



scores very well, coming in closer to the leader than the losers. This level of color accuracy is more than enough to deliver a realistic picture.

The MPG 341CQPX reached a default color temperature of 6200K, off our target of 6500K, and a default gamma of 2.3, off our target of 2.2. In practice, that means the MPG 341CQPX's image looks a bit darker and warmer than it should. It's not a big problem—in many situations, it's not noticeable—but it's there. This minor downside is shared with many other QD-OLED monitors, which in general tend to be slightly off-target by these metrics.

Sharpness is okay. Like nearly all 34-inch ultrawide monitors, the MPG 341CQPX has a resolution of 3440×1440, which works out to be about 109 pixels per inch. That's reasonably sharp, though far less so than a 27-inch 4K

monitor, which achieves 163 pixels per inch. QD-OLED panels also have issues with pixelation and color artifacting around fine, high-contrast edges, which is due to their unusual subpixel layout. This problem is not often visible in games or movies, but it can be an issue if you work with spreadsheets or documents that have small font sizes. Those who spend a lot of their day staring at text might want to consider a LCD display.

On balance, the MSI MPG 341CQPX's performance is very similar to that of other QD-OLED monitors, and broadly similar to OLED monitors as a category. That is good news, as OLED monitors have exceptional contrast and color performance. Brightness remains a bit low in SDR, though, and sharpness might sometimes be inadequate. It's a fantastic monitor for gaming, movies, and visual content creation, though less impressive for office productivity.

HDR IMAGE QUALITY

The MSI MPG 341CQPX, like most QD-OLED monitors, is VESA DisplayHDR True Black 400 certified. That means it can achieve a peak brightness of 400 nits while maintaining a "true black" luminance of zero nits. This is a basic level of VESA DisplayHDR certification, so it doesn't necessarily guarantee great, or even decent, HDR performance.

However, the MPG 341CQPX also has a 1000 Peak Brightness mode, and ups the ante. In this mode, the monitor can achieve a

sustained brightness of 1,012 nits in a 10 percent window, meaning just 10 percent of the display was brightly lit (showing a white HDR image). Increasing the lit area to 50 percent drops brightness to 354 nits, and full-screen sustained HDR brightness was just 268 nits in this mode.

Those are great results for an OLED monitor, and place the MPG 341CQPX next to some recent LG WOLED monitors, such as the Asus ROG Strix XG27AQDMG ([fave.co/4dL9RTB](https://www.fave.co/4dL9RTB)). In general, the MSI MPG 341CQPX looks quite bright in HDR with the 1000 Peak Brightness mode turned on. As the numbers show, it's really at its best when displaying bright highlights. The lightning bolts from *Mad Max: Fury Road*'s "Into the Storm" scene were brilliant and well defined, for example.

Subjectively, I felt the improvement of the 1000 Peak Brightness mode was clear.



The lightning bolts from *Mad Max: Fury Road*'s "Into the Storm" scene were brilliant and well defined.

Highlights were not as often blown out and I saw more detail in brighter areas of a scene. After going back and forth, I decided that I prefer the 1000 Peak Brightness mode, and I'm glad to see it was included.

Still, even this mode can struggle to pick up luminance detail in scenes where more of the display must be lit, and scenes that light the entire screen—like an action sequence on a snowy mountain—can look a bit dull. That remains a challenge for OLED monitors, which still falter in full-screen HDR brightness.

MOTION PERFORMANCE

The MSI MPG 341CQPX has a refresh rate of 240Hz. While that is not unusual for an OLED monitor, it is unusual for a 34-inch QD-OLED. I'm sure that many other monitors will soon follow suit but, for now, it gives the MSI an edge over older competitors.

Motion clarity is fantastic. That's thanks

not only to the 240Hz refresh rate, which reduces motion blur due to persistence of vision, but also OLED's quick pixel response times, which reduce ghosting. In general, small fast-moving objects are easy to identify and many details, including small text, remain at least partially readable. It's not as good as a 360Hz OLED like



The MPG 341CQPX is a great entry in the OLED arena.

the Alienware AW2725DF ([fave.co/3VKpmFq](https://www.fave.co/3VKpmFq)), but it's still great.

Strangely—or perhaps not—MSI lists support for Adaptive Sync technology but doesn't list AMD FreeSync or Nvidia G-Sync Compatible certification. This is not as much of a problem as it might seem because Adaptive Sync, FreeSync, and G-Sync Compatible are broadly compatible with each other, and I confirmed the MSI worked with AMD FreeSync via my AMD Radeon 7800 XT. Frankly, I think we're going to see FreeSync and G-Sync certifications fade from relevance as VESA Adaptive Sync becomes the industry standard in coming years.

We're not there yet, though, and I still prefer to see certification, as it gives shoppers peace of mind that the monitor will work correctly with their AMD or Nvidia video card.

BOTTOM LINE

The MSI MPG 341CQPX is a great entry in the OLED arena with several advantages over most competitors. In addition to all the usual strengths of OLED, like outstanding contrast and color performance, it has a 240Hz refresh, good HDR highlights (in the 1000 Peak Brightness mode), and a USB-C port with useful Power Delivery. MSI would do well to improve the look of its design, and the

oversize stand is an annoyance, but the latter problem is easily solved with a monitor arm. The MPG 341CQPX is a great choice if you want a 34-inch ultrawide OLED monitor for games, movies, or content creation. 🔌

MSI MPG 341CQPX



PROS

- USB-C power with 98 watts of Power Delivery.
- Great color performance.
- Higher HDR peak brightness than some peers.

CONS

- Stand is too large.
- Works with FreeSync and G-Sync but lacks certification.
- SDR brightness is mediocre.

BOTTOM LINE

The MSI MPG 341CQPX is yet another QD-OLED ultrawide, but it improves on its predecessors with better HDR, a 240Hz refresh rate, and USB-C port with 98 watts of Power Delivery.

\$899



SteelSeries Arena 3 speakers: Detail-rich sound for every game

A powerful 2.0 PC speaker system! **BY DOMINIC BAYLEY**

SteelSeries' 2.0 speaker system, the Arena 3, made a great first impression on me with its clear, detailed sound and a power profile that can easily fill up a room with immersive audio. Its useful mix of wired and wireless connectivity conveniently took care of my gaming and other audio needs. It was also a cinch to set up and use. Read on to find out more.

DESIGN AND SIZE

Pulling the Arena 3 system out of the box, I noticed two things: Firstly, the two speakers are of medium height—they measure 4.13×7.72×4.97 inches, with each of the two units about the size of a cantaloupe. That makes them a lot bigger than other 2.0 speaker systems like the Creative Pebble Pro (fave.co/3Zr7HEJ).

Secondly, the all-black design with simple black-on-black SteelSeries logos ooze gamer



The all-black design oozes gamer appeal.

appeal. That's heightened by their shape, an oblong that narrows toward the top and flattens out at the very top. Does anyone else see Darth Vader's helmet in that?

A speaker this slick could have really done with more RGB accents, though, rather than just the tiny indicator light present on the right speaker.

As with other SteelSeries products, the build quality is very good. The main body is comprised of a strong plastic that's both thick and tough. Each speaker sits on broad circular base that will only wobble if you nudge it. For that privilege, you do have to pay a little more than for some other

speakers—they currently cost \$150, compared to the \$99 for the Creative Pebble Pro.

The speaker bases allow each unit a few degrees of up and down movement, so if you like to angle your speakers toward your head, you can do that with Arena 3.

CONNECTIVITY AND CONTROLS

The Arena 3 works on a PC or a Mac. It has a mix of wired and wireless connectivity, so you can easily hook it up to a TV, tablet, or smartphone. Not only do you get a 3.5mm jack for making an analog connection, but you also get a 3.5mm aux-in jack and a dedicated 3.5mm 4-pole jack for a headset, too.



The SteelSeries Arena 3 has three 3.5mm jacks, one for PC, an aux-in, and one for a headset.

The convenience of having all three options at your beck and call is that you don't need to continually unplug your devices when you want to switch between them.

Bluetooth 4.2 functionality is another big plus that allows you to play audio from any Bluetooth enabled device. For me, I liked the convenience of being able to stream music from my smartphone while not having to get up from my gaming rig between bouts. The Arena 3 lacks USB-C connectivity, however, and therefore also has no USB-C passthrough.

The Arena 3's controls are quite simple. They consist of just a multi-function button and a volume knob on the base of the right speaker. The multi-function button does what its name suggests, allowing you to pair Bluetooth, mute the sound, and switch your audio signal to your headset with just a few presses.



The Arena 3 has just two controls on the right speaker's base.

The tiny RGB indicator light is a handy addition that denotes which mode you're in at any given time. If that gets distracting, though, you can turn it off, too.

AUDIO QUALITY

With its powerful sound, the SteelSeries Arena 3 easily fills a room at 60 percent volume. The 4-inch organic fiber drivers produce a very clear audio signature and do a great job warding off distortion when the sound is cranked high.

There's also a fine level of detail in at different audio frequencies—the lows, mids, and highs. That makes the Arena 3 perfect for what it's primary intent: PC gaming. It has no trouble delivering the kind of sound immersion that gamers love.

That balance means games of all genres sound rich and satisfying. Personally, I lapped up the detailed zings, chimes, and tings of spells I cast in *Baldur's Gate 3*. But I also loved the way the speakers conveyed radio calls, explosions, and bullet ricochets in games like *Counter-Strike 2*, which seemed all the more real.

Vocals, too, sounded crisp and warm in movies, podcasts, and phone calls. A decent bass presence shook a veil off some of my old favorite music tracks,



SteelSeries' Arena 3 is a well-rounded device.

like Bobby McFerrin's "Don't Worry Be Happy." In this case, I was delighted with how the speaker brought the background bass vocals to the fore, when they usually get lost in a cacophony of other sounds on other audio devices.

Plugging in a headset proved the Arena 3 could deliver the same kind of sound experience in this mode. If anything, I enjoyed listening even more than when it was unplugged since all that glorious detail was channeled directly into my ears.

Some devices with multi-function buttons can be tricky to work out, but the Arena 3 is straightforward. I didn't need to lift a finger to switch to headset mode; the speaker automatically registered me plugging it in and switched for me. Bluetooth connected seamlessly to my PC and smartphone on the first go too, which is exactly what I was hoping for.

BOTTOM LINE

SteelSeries' 2.0 speaker system is a well-rounded device. It packs clear, crisp, and detailed sound, has a mix of wired and wireless connectivity, and fills up a room at just 60 percent volume. I think the speaker design even slightly resembles Darth Vader's helmet.

The speakers' range is excellent, so playing games

in any genre is immersive and invigorating. For that versatility, you can expect to pay \$150, which is a little more than some rival systems. But for enthusiast gamers, that's going to be money well spent. 🔌

SteelSeries Arena 3



PROS

- Clear, detail-rich sound.
- Can fill up a room at 60 percent volume.
- A useful mix of wired and wireless connectivity.
- Easy setup and easy to use.

CONS

- The design could have done with more RGB accents to liven it up.
- USB-C connectivity is not supported.

BOTTOM LINE

The SteelSeries Arena 3 has a clear crisp and detailed audio signature, so games in any genre sound terrific. A versatile mix of wired and wireless connectivity means you can just as easily use it as your living room sound system to stream and enjoy music.

\$149



Dell XPS 13: Snapdragon laptop leaves us wanting more

Qualcomm isn't enough to raise up the floundering XPS 13. **BY MARK KNAPP**

The Dell XPS 13 (9345), fave.co/3B1VWue, takes most of what we already saw in the Dell XPS 13 (9340)—a thin, light, and stylish system that focused a little too much on style and not enough on substance next to its competition—and loads it with new brains in the form of a Qualcomm Snapdragon X Elite chip.

While the Intel-powered XPS 13 was already on shaky ground, the shift to

Snapdragon only gives this new version even less stable footing to compete with the many great laptops out there.

Snapdragon might promise advanced AI capabilities over the current field, but with so many AI capabilities in wait-and-see limbo, it's probably worth waiting and seeing if the impending AMD and Intel mobile chips don't just catch up on the NPU front and then continue to score easy

wins in the CPU and GPU department. As it stands, the \$1,299 Dell XPS 13 (9345) has a rocky path ahead of it.

SPECS AND FEATURES

The Dell XPS 13 comes with several configuration options, including memory, storage, display, and color. The base configuration tested here comes in at \$1,299. You can bump up memory to 32GB for an extra \$100 or to 64GB for an extra \$500. Storage can go to 1TB for \$100 extra or 2TB for \$300 extra. A 2560×1600 touch display is available for a \$300 upcharge or a touch OLED display with a 2880×1800 resolution and 60Hz refresh rate for \$400 extra. Windows 11 Home is included with the laptop, but Windows 11 Pro is available for \$50 extra.

All of these upgrades see the top specification of the XPS 13 reach \$2,559. While most upgrades can be selected independent of one another, the OLED display option isn't available without also upgrading memory to at least 32GB.

Dell offers two colors, a dark Graphite or a light Platinum. The choice of colors incurs no extra charge.

CPU: Snapdragon X Elite X1E-80-100

Memory: 16GB LPDDR5X

Graphics/GPU: Integrated Qualcomm Adreno

Display: 13.4-inch FHD+ LCD

Storage: 512GB PCIe Gen4 SSD

Webcam: 1080p

Connectivity: 2× USB4 with Power Delivery and DisplayPort Alternate Mode

Networking: WiFi 7, Bluetooth 5.4

Biometrics: Windows Hello fingerprint, facial recognition

Battery capacity: 55 watt-hours

Dimensions: 11.62×7.84×0.6 inches

Weight: 2.7 pounds

MSRP: \$1,299 as tested (\$1,299 base)

DESIGN AND BUILD QUALITY

Hello, old friend. Getting my hands on the Dell XPS 13 (9345), I was confronted with



The XPS 13's metal enclosure covers the outside, curving smoothly at the sides and ending in some sharp lips.

pretty much the same piece of hardware that I've reviewed a few times over now, having tested the first XPS 13 Plus as well as this year's Intel-based XPS 13 (fave.co/3S4k6tO).

What we get here with the XPS 13 (9345) is the same machine with different guts.

The XPS 13 is an exceedingly slick piece of hardware. Its metal enclosure covers the outside, curving smoothly at the sides and ending in some sharp lips. Fortunately, the compact design of the laptop means those lips don't end up digging into my wrists generally.

Where it's not metal, the XPS 13 is mostly glass. The trackpad sits beneath one monolithic piece of glass that stretches from one side of the laptop to the other. The trackpad itself is only a little wider than the spacebar though, so it can be a little tricky to pin down.

The 13.4-inch display on the XPS 13 is surrounded by an impressively slim border on all four sides. And it's all the more impressive when considering the top border includes a Windows Hello-ready camera.

The whole thing folds shut into a tight little clamshell that slips easily into bags, and it's so



The feel of each key is lovely, with a modest actuation force, a nice pop, and a quick reset.

light at 2.7 pounds that it can be hard to tell it's even packed. It's also a sturdy little thing, with little flex to the display and almost no perceptible keyboard deck flex.

Opened up, the XPS 13 sits steadily on two grippy rubber strips that stretch wide across the bottom of the laptop. Along the outer edge of the base, you'll also find a series of slits that serve as both air intakes and speaker ports. The heat of the laptop pumps out through similarly subtle vents tucked along the display hinge.

KEYBOARD, TRACKPAD

The keyboard, for all its beauty, is a pain to use. It's a true shame because the actual feel of each key is lovely, with a modest actuation force, a nice pop, and a quick reset. This could make for quick, comfy typing if it weren't for the design of the keycaps. The big

squares with only tiny spaces between neighbors make it exceedingly hard to feel out where one key ends and the next starts. As a result, I find that I might be typing along at over 120 words per minute, but one misclick will see me slow significantly as I have to reorient my hands.

The same goes for any far reaches away from the home row, such as a hit up to the Backspace. Worse still is the function row, which remains a series of illuminated capacitive touch buttons. While I can abide this choice for many keys, it's truly awkward to combine them with physical keys for keyboard shortcuts (like Ctrl+Shift+Esc), and they offer no haptic response, so repeated presses also become awkward. It's all the more shameful that the Delete key is relegated to this row.

With the effectively invisible trackpad, palm rejection is a reasonable concern. Thankfully, it seems not only effective but also imperceptible. It's possible to type and mouse around at the same time or switch back and forth with no lag between actions, and yet while typing with my palms moving all over the trackpad, I've had little trouble. That said, sometimes it's not my palms but my thumbs that rest on the trackpad while I type, and this

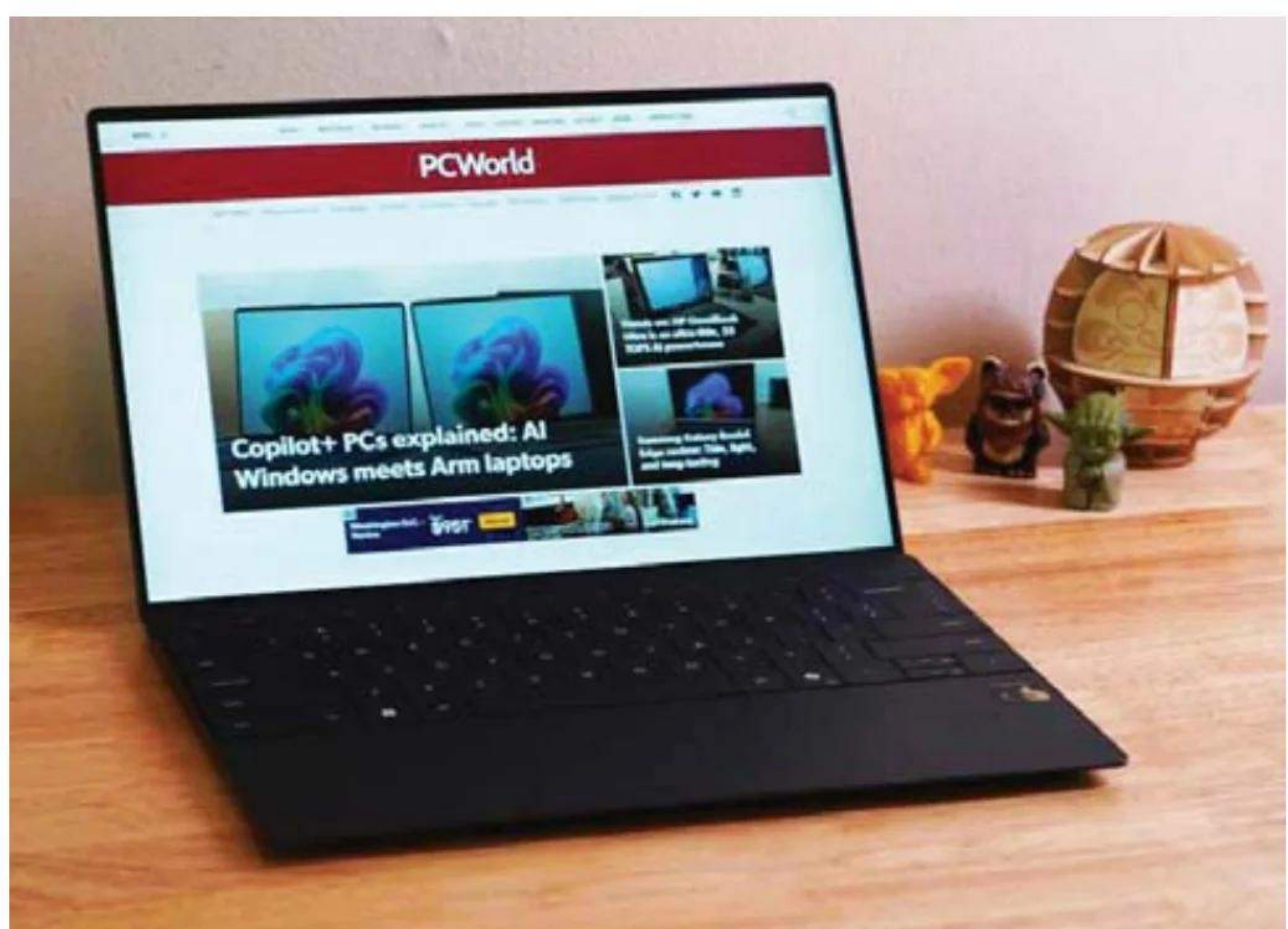
can make the mouse float around a bit or result in the rare misclick.

The trackpad itself is a mixed bag as well. The glass surface is absolutely lovely to glide across. It can also click down with a satisfying thunk. But the undefined bounds of it are an ever present problem. It's too easy to mouse off the edge. And that excellent click is limited to a sweet spot, with the outer edges of the trackpad proving much stiffer and harder to reliably double-click.

So, just as with preceding XPS 13 models in this style, I'm faced with the elegance of the design and the painful way function falls by the wayside.

DISPLAY, AUDIO

The Dell XPS 13 has a good display, but there's little to say about it beyond that. It's satisfyingly bright, hitting 551 nits, and its



The display has an anti-glare finish that's thoroughly effective.

color achieves 100 percent coverage of the sRGB color space. That combines with a 2060:1 contrast ratio that can make content pop a little bit more dramatically. It even has a 30-120Hz refresh rate range, providing smooth visuals and some power savings in certain contexts.

The display also has an anti-glare finish that's thoroughly effective. However, the screen ends up with dramatic shifts in quality when viewed at off angles—colors, brightness, and perceived contrast can all take a turn for the worse if you're not looking at the display square on.

The audio is similar in quality. The speakers on the XPS 13 can pump out impressive volume, and they actually have fairly full sound. Bass is more present here than on a lot of laptops, though deep sub-bass doesn't come through. However, the treble and mids can suffer from sibilance, especially cymbals, and become grating at high volume levels.



The microphones on the laptop do a decent job of picking up voices.

All this is to say that, for both the display and speakers, when the conditions are right, they can be pretty solid. But the experience relies on those conditions.

WEBCAM, MICROPHONE, BIOMETRICS

The webcam on the XPS 13 is decent but unimpressive. It's reasonably sharp at 1080p, but suffers from some added softness in less than ideal lighting because of the noise, which is introduced quickly. Even in well-lit situations, it's not at the level of smartphone selfie cams. Finer details, such as my beard hairs, really get blurred together.

The microphones on the laptop do a decent job picking up my voice. They cut down on background noise as well, as the sound of some cicadas and construction equipment outside was effectively neutralized by the computer.

Dell offers both a fingerprint scanner as well as Windows Hello facial recognition on the XPS 13. These provide quick and easy ways to sign into the machine, with the facial recognition being especially speedy.

CONNECTIVITY

Dell has long been ditching ports on the XPS 13, and this model does nothing to



The XPS 13 has just two USB-C ports—one on each side.

reverse that process. As a result, it's left with just two USB-C ports—one on each side. Those are both USB4 ports at least, giving you 40Gbps transfer speeds and DisplayPort capability, but if you need anything as simple as USB-A or HDMI, you'll be turning to a dongle. And since power input uses those ports as well, you'll be down to just one port if you're juicing up the laptop unless you get a USB hub with enough pass-through.

Wireless connectivity is strong, at least. You get Wi-Fi 7 from a Qualcomm modem that has proved consistent about reconnecting to networks. Bluetooth 5.4 is also on board.

PERFORMANCE

The Dell XPS 13 9345 is built around the Snapdragon X Elite X1E-80-100 chip. It's not the top tier of Qualcomm's new offerings, but it's not at the bottom either. That said, this new breed of PC brain has to prove itself, and it isn't going up against slouches. The Dell XPS 13 (9340), fave.co/3S4k6tO, is

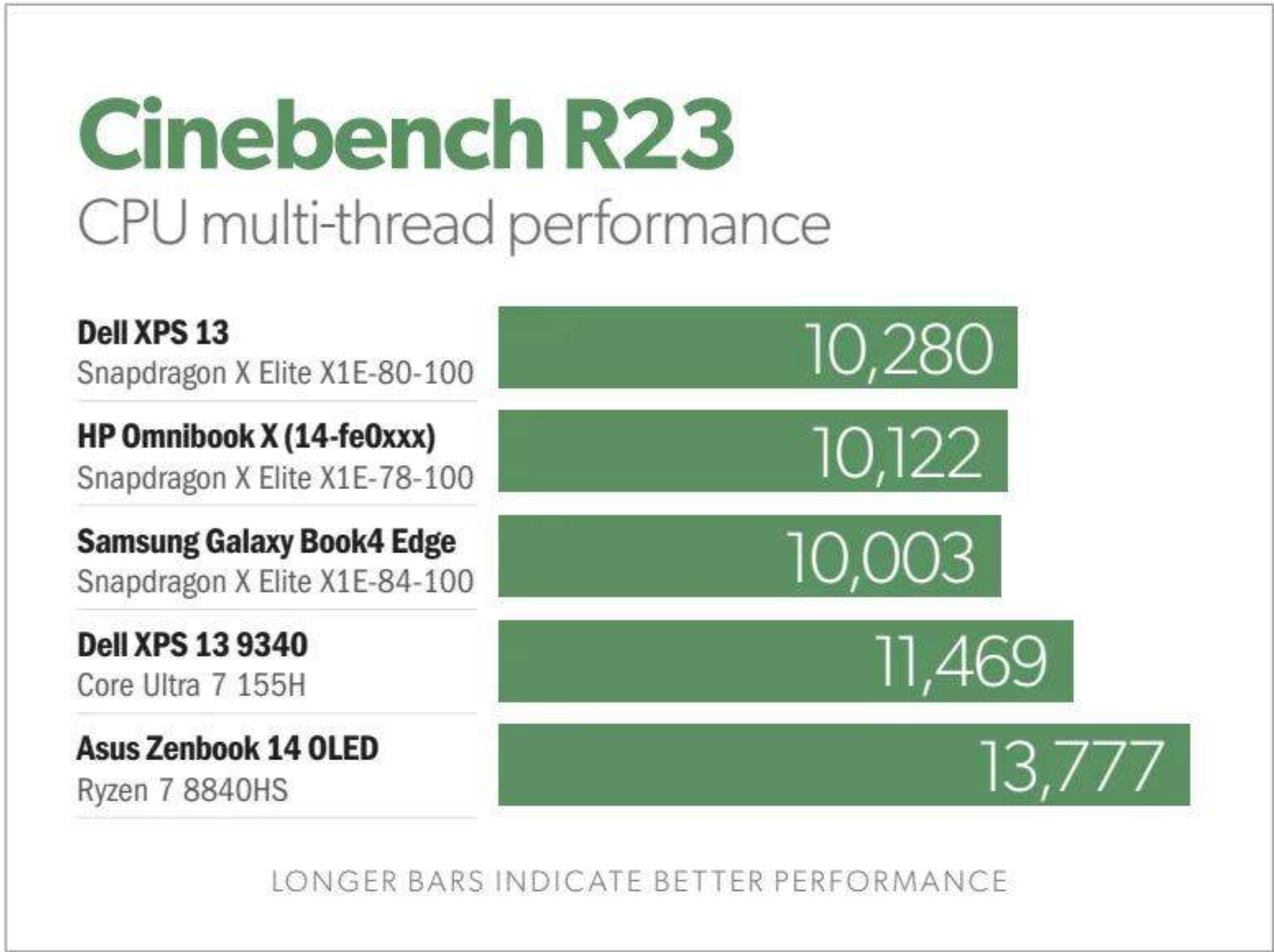
practically the same computer just built around an Intel Core Ultra 7 155H, and it's \$100 more expensive for a similar configuration.

HP has a similar system to the XPS

13 (9345) with the Omnibook X, which runs on a slightly down-specced Snapdragon X Elite X1E-78-100 chip for \$1,199 as tested, while the Samsung Galaxy Book4 Edge (fave.co/3MbYliU) runs a higher-tier X1E-84-100 for \$1,749 as tested. And of course the Asus Zenbook 14 OLED (fave.co/4bQ3Eo2) is ready to challenge all comers in the space with its Ryzen 7 8840HS processor and truly competitive \$849 price tag.

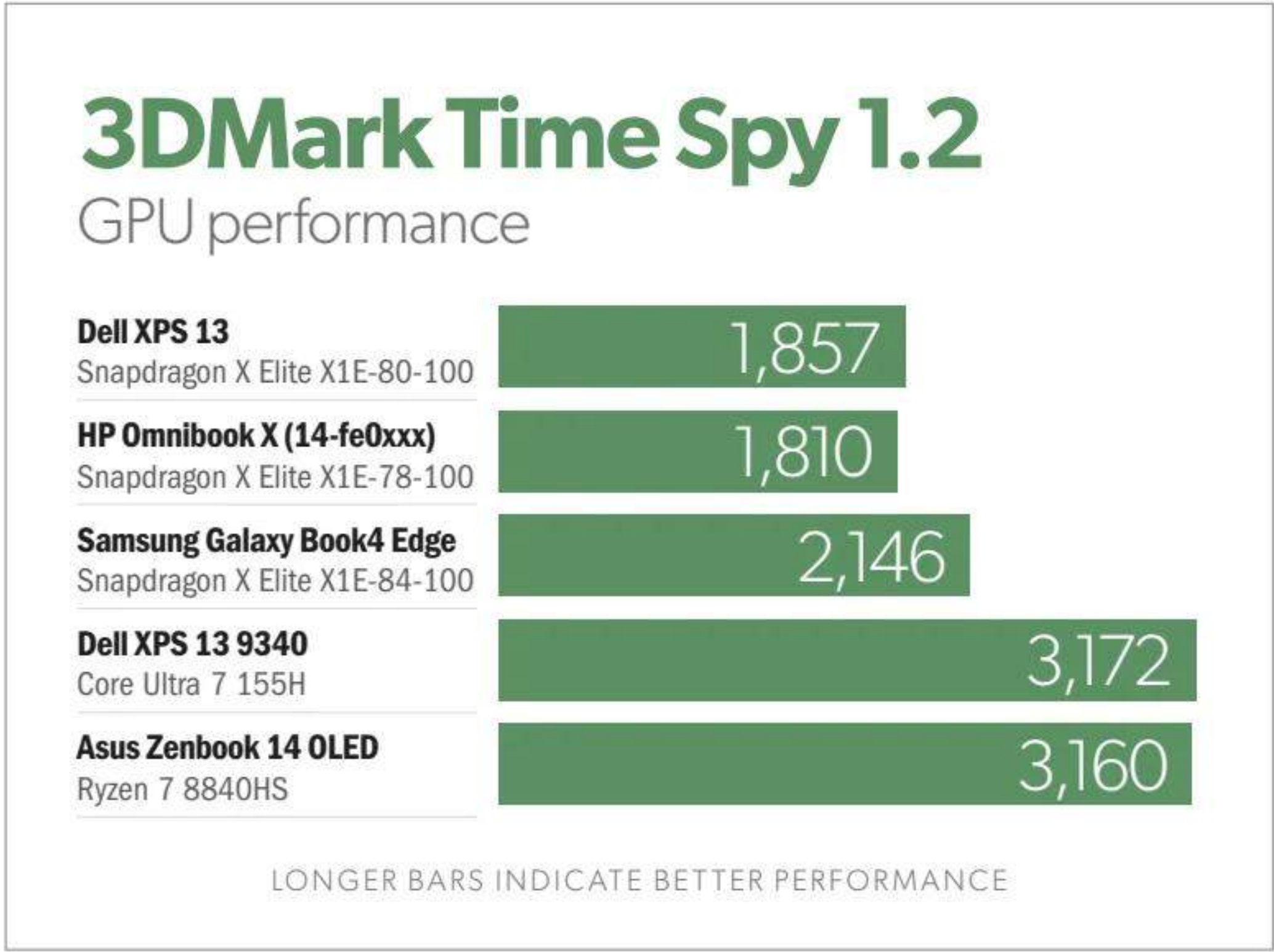
While we can see respectable performance from the Dell XPS 13's Snapdragon chip on its own, it really doesn't stand out from the pack. Looking at Cinebench R23, the XPS 13 may show a narrow margin over the Omnibook X and Galaxy Book4 Edge (surprising giving the higher-tier chip in Samsung's system), but it lags noticeably behind the Intel-powered XPS 13 and far behind the Asus Zenbook 14 OLED's Ryzen 7 8840HS processor.

We saw similar margins in Cinebench R20 as well. Now, none of these chips are offering weak processing, but with most of the laptops



asking for over \$1,000 to attain them, it’s more than a little dismaying to see them all beaten by a laptop costing \$849. For the XPS 13 (9345), the situation just doesn’t look good.

Graphics performance comes up similarly wanting for the XPS 13 (9345). The Adreno graphics in the system don’t keep up with the Arc graphics in its Intel counterpart, with a considerable gulf separating the two in our 3DMark Time Spy test. AMD’s Radeon 780M graphics also pull far ahead in the Asus Zenbook 14 OLED. The Dell XPS 13 (9345) is

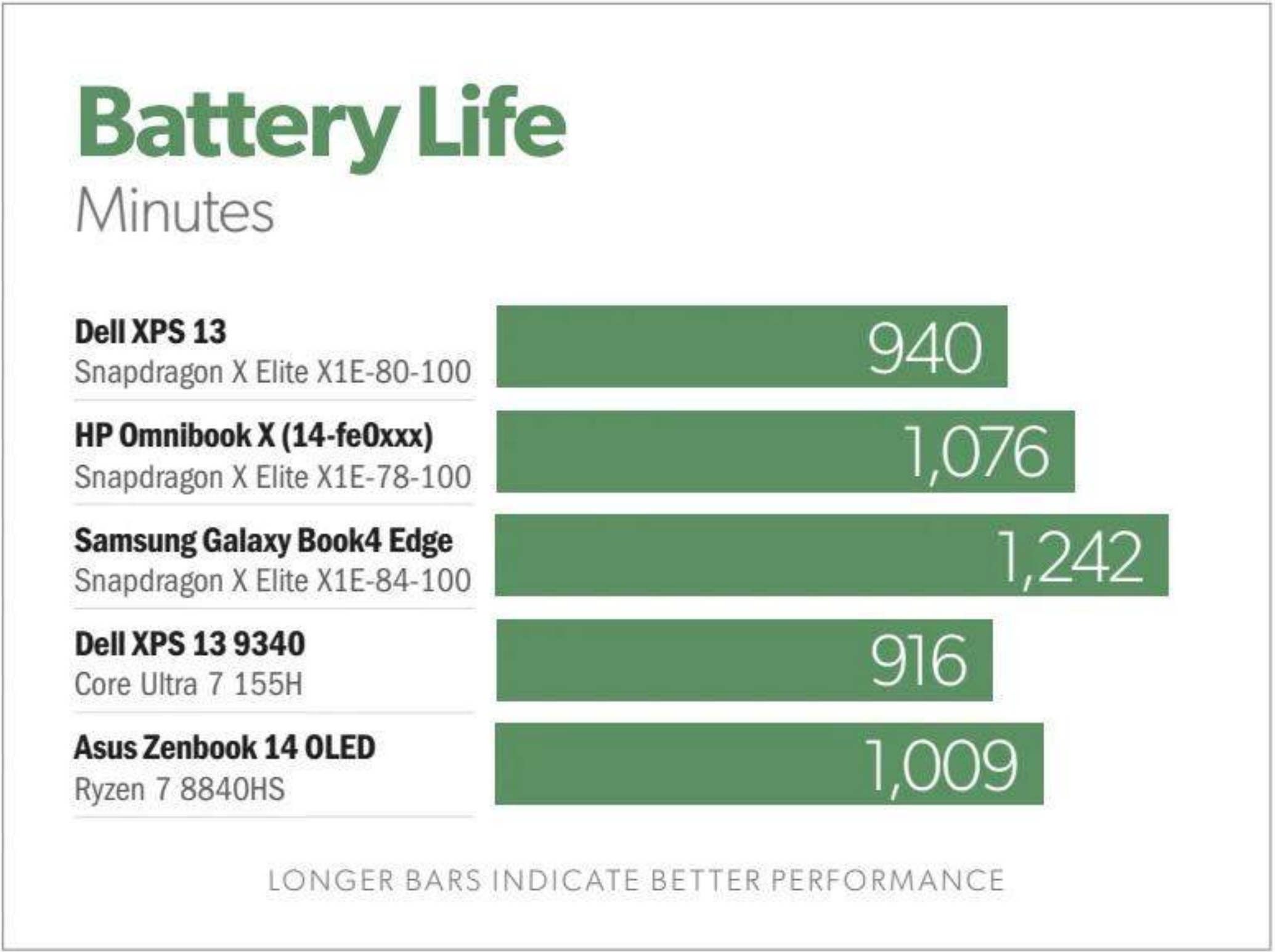


simply not pulling the weight it should be for a laptop over \$1,000.

The Snapdragon chip inside can also see some variance in performance depending on whether it’s running the ARM version of a program or an x86 version, and that can mean unreliable speeds. I noted quite a few hitches while using the x86 version of Chrome. There is an ARM version that might perform better, but for now, the Snapdragon chip needs to prove itself capable of effective x86 emulation to be worth buying as we’re a long way from having ARM-native versions of every program out there.

BATTERY LIFE

Battery life is a strong point for the Dell XPS 13 (9245). It mustered 16 hours of runtime in our video playback test, which is a great result. Of course, the Intel-powered XPS 13 was already a great performer with over 15 hours of runtime in the same test. And unfortunately for Dell, being strong only counts if others





The Dell XPS 13 (9345) takes an AI-powered spin on the XPS 13.

aren't even strong. Alas, both of Dell's XPS 13 laptops proved the weakest of the bunch when it came to battery life.

The HP Omnibook X came out well ahead with nearly 18 hours of runtime on average, and the Samsung Galaxy Book4 Edge took things even further with a runtime topping 20 hours. While it was a close match, even the Asus Zenbook 14 OLED managed to come out ahead, netting it yet one more win over the XPS 13.

BOTTOM LINE

The Dell XPS 13 (9345) takes an AI-powered spin on the XPS 13, but the Snapdragon chip doesn't offer meaningful improvements in most departments and comes with considerable downgrades just about everywhere. It's a letdown compared to the

Intel Core 7 Ultra 155H-powered XPS 13, which was itself underperforming next to the competition. The system may get the benefit of an NPU capable of 45 TOPS, but I've yet to see Windows taking meaningful advantage of that, and any system with even a low-level discrete GPU, such as the RTX 4050, can deliver more AI inference muscle than that.

The XPS 13 (9345) is just too much for too little. If the elegant design of the laptop at least translated into a more user-friendly system, it might be worth closer

consideration. But as it stands, its best feature is a bright, matte display providing a window into an experience that's letdown after letdown. 🔌

Dell XPS 13



PROS

- Sleek and lightweight design.
- Easy to see display.
- Convenient biometrics.

CONS

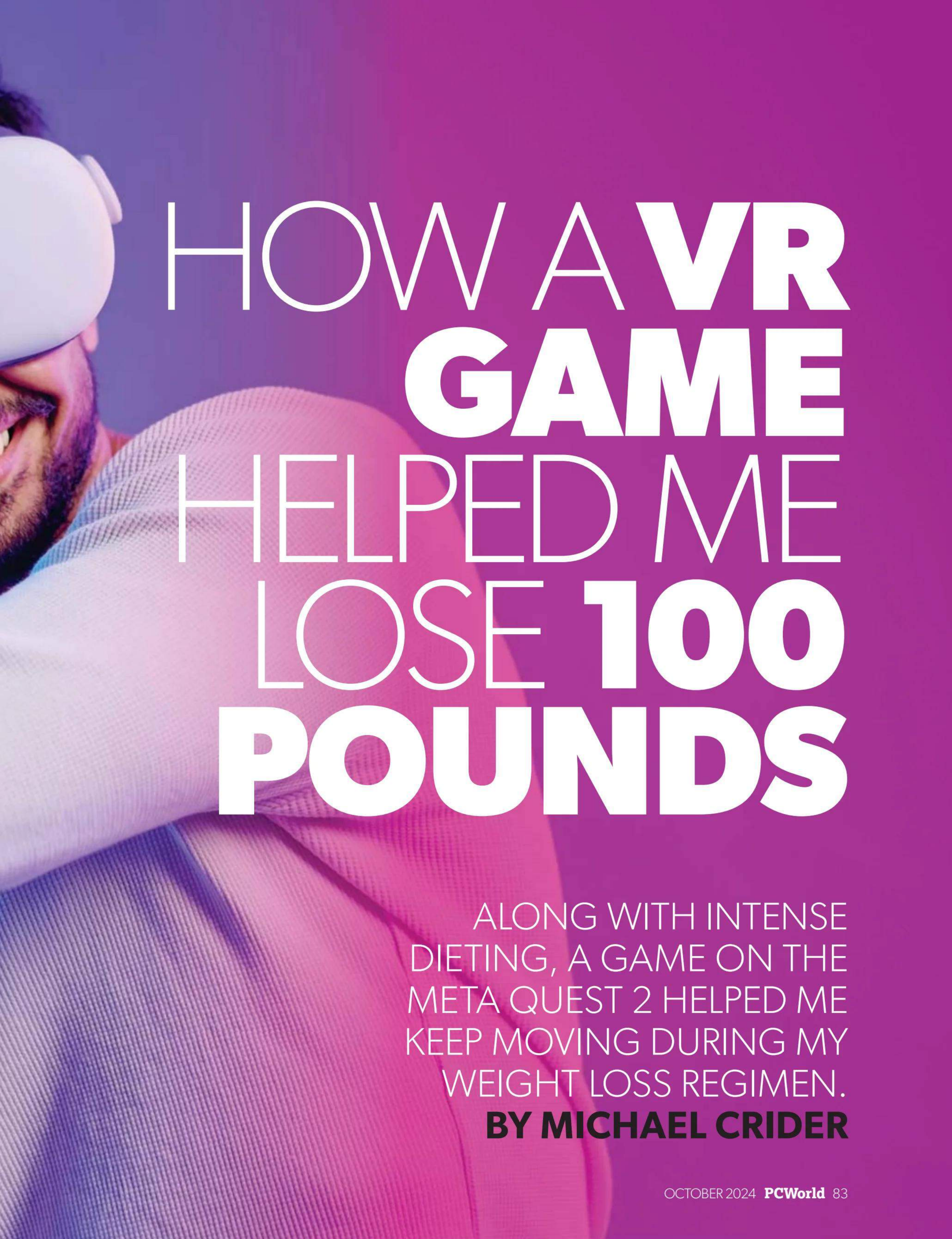
- Few ports.
- Visuals shift dramatically at off angles.
- Contentious keyboard.
- Largely outgunned by the Intel version.

BOTTOM LINE

The Intel-powered Dell XPS 13 was already a letdown next to the competition, and this Snapdragon-powered XPS 13 winds up downgrading most of the package without a meaningful reduction in price. It just makes a disappointing experience worse.

From \$1,299





HOW A **VR** **GAME** HELPED ME LOSE **100** **POUNDS**

ALONG WITH INTENSE
DIETING, A GAME ON THE
META QUEST 2 HELPED ME
KEEP MOVING DURING MY
WEIGHT LOSS REGIMEN.

BY MICHAEL CRIDER

Two years ago I weighed 330 pounds. That's just shy of 150 kilograms, if you're not using Freedom Units. On August 7 my scale showed 229.4 pounds (104 kilos). While that's by no means slim for a 5-foot-10 man, and I intend to lose more, I think it's fair to say I'm now closer to "chunky" than obese. And a small but meaningful part of that weight loss is thanks to a VR game.

Since I know a lot of you are scanning this article and just want me to get to the point: It's *Ragnarock*. That's the VR game. You can buy it on Steam (fave.co/4e3nFt3), the Meta Quest Store (fave.co/4dcHHAa), or the PlayStation Store (fave.co/3XMODS7). There are demos to try out on all platforms. Now stick around if you want the details.

HOW I GOT HERE

I'm not going to lie to you. Though I enjoy using it immensely, a virtual reality headset is not a magic device that will cause you to lose weight. The success of any weight loss plan depends on a diet of fewer calories than those you burn. No matter how much you exercise or build

muscle, you can't escape that thermodynamic requirement.

And I haven't. I've been dieting pretty dramatically since the start of this year, and that's where the lion's share—or perhaps the rabbit's share?—of my improvement has come from. As any nutritionist will tell you, "You can't outrun a bad diet (fave.co/3ZqjF1m)."

But exercising can certainly contribute to that goal, and help you build muscle and endurance while you're doing it. Unfortunately, I'm rather limited in what exercises I can do because of sciatica, a condition I've been carefully managing for over a decade. It's why I'm such a big proponent of standing desks (fave.co/4epIMqv), incidentally, and it means I can't lift most weights, and I can't do a lot of physically intense sports. I can't even jog without risking debilitating back pain for days at a time.

And I've always struggled with exercising just for exercising's sake. Sitting



Me in July 2022 and August 2024.

on a machine for an hour and going nowhere is something I find extremely tedious. So even those aerobic machines that don't put any stress on my back—walking on a treadmill, rowing, stationary bikes—tend to leave me bored and discouraged.



I'd bought a Quest 2 to spice up my *Skyrim* runs.

EXERCISING WITHOUT 'EXERCISING'

When I started working for PCWorld, I was invited to participate in a companywide event called Walktober (fave.co/3zjvT1k). Despite the fact that I am almost entirely sedentary, my competitive nature was sparked, and I found myself invested in the outcome of my small team. Suddenly walking in circles for more than an hour a day wasn't self-improvement. It was competition, hitting the same buttons in my brain as a competitive video game.

But I live in Pennsylvania, which is often dark, wet, and cold in October. So at the end of a long day, and with only a couple of hours to get in another 7,000 steps while the rain poured outside, I searched for an alternative. "Steps" here is used in a loose sense—the Walktober website would convert any kind of exercise recorded by my fitness tracker into an

approximation of steps, whether or not I was actually walking or running.

And so I looked to my Quest 2 headset (fave.co/3JOgIDs). I'd bought it on sale earlier that year, more or less as a means of spicing up my *Skyrim* runs with virtual reality, and getting some hands-on experience so I could write about it. But I found that actually swinging my arms to stab Nordic zombies could wear me out after a while...and there were "exercise" apps all over the Meta store. They all seemed to have a bit of that "Wii workout game" feel (fave.co/4d7qpEv) to me, but there was one demo I tried that had me huffing and puffing.

If I could "gamify" a workout with just a little context added by my coworkers, why not add a workout context to a game that fits into the category? I wondered how many "steps" I could rack up, approximated by my arm motions and heart rate as measured by

Fitbit, while playing in virtual reality. I set my Fitbit to track an Aerobics workout—the closest approximation I could get to waving my arms around—and started up *Ragnarock*.

LIKE *GUITAR HERO* AND WHACK-A-MOLE IN VALHALLA

Ragnarock shares a lot of DNA with the console rhythm games of the 2000s—think *Guitar Hero* and *Rock Band*. It has that same basic setup, except you're swinging motion controllers instead of pressing buttons on a plastic guitar. As the runes come down the screen, you beat the drums in time with the beat. The closer you are to the beat, the faster your longboat Vikings will row.

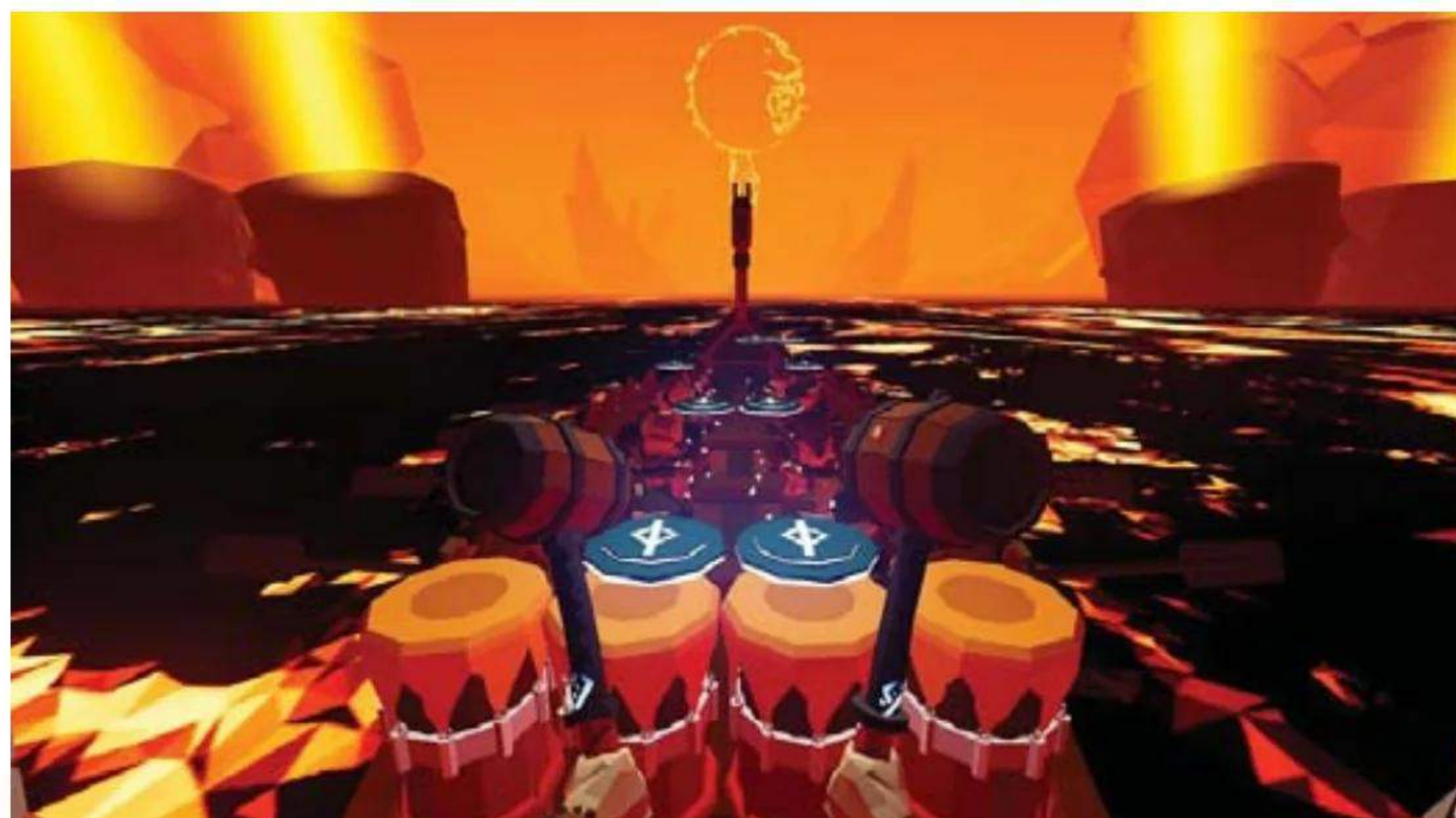
Imagine *Guitar Hero*, plus whack-a-mole, all set to Nordic heavy metal. That's about it as far as game mechanics go. If you can get a few dozen hits in a row without missing, you'll

charge up a power meter. Smash the shields on the side of the screen—or more accurately, to the side of the virtual space you're inhabiting—and you'll electrify your rowers with the lightning of the Norse gods to make them row even faster. (Don't worry, they're into it.) If you save up your charge and go farther without missing, you can give them a superpower lightning boost.

If trying to beat your best score (expressed in the distance your rowers go) gets old, you can go online and participate in multiplayer "races," as every player gets their own boat and rows to the same song. There are dozens of songs in the base game, but you can get more via DLC (again, very similar to those old rhythm games) or load up custom-created songs made by the game's community.

At first glance it doesn't seem like swinging wireless controllers in a drum motion would burn a lot of calories. But at

higher difficulty levels, each one of those songs might have a thousand individual notes to hit. That's hundreds of swings for each arm, sometimes multiple times a second. I'm no drummer, but it certainly feels like the kind of workout you can get from an intense session (fave.co/47s4kPU), especially since the



***Ragnarock* is best described as *Guitar Hero* plus whack-a-mole, all set to Nordic heavy metal.**

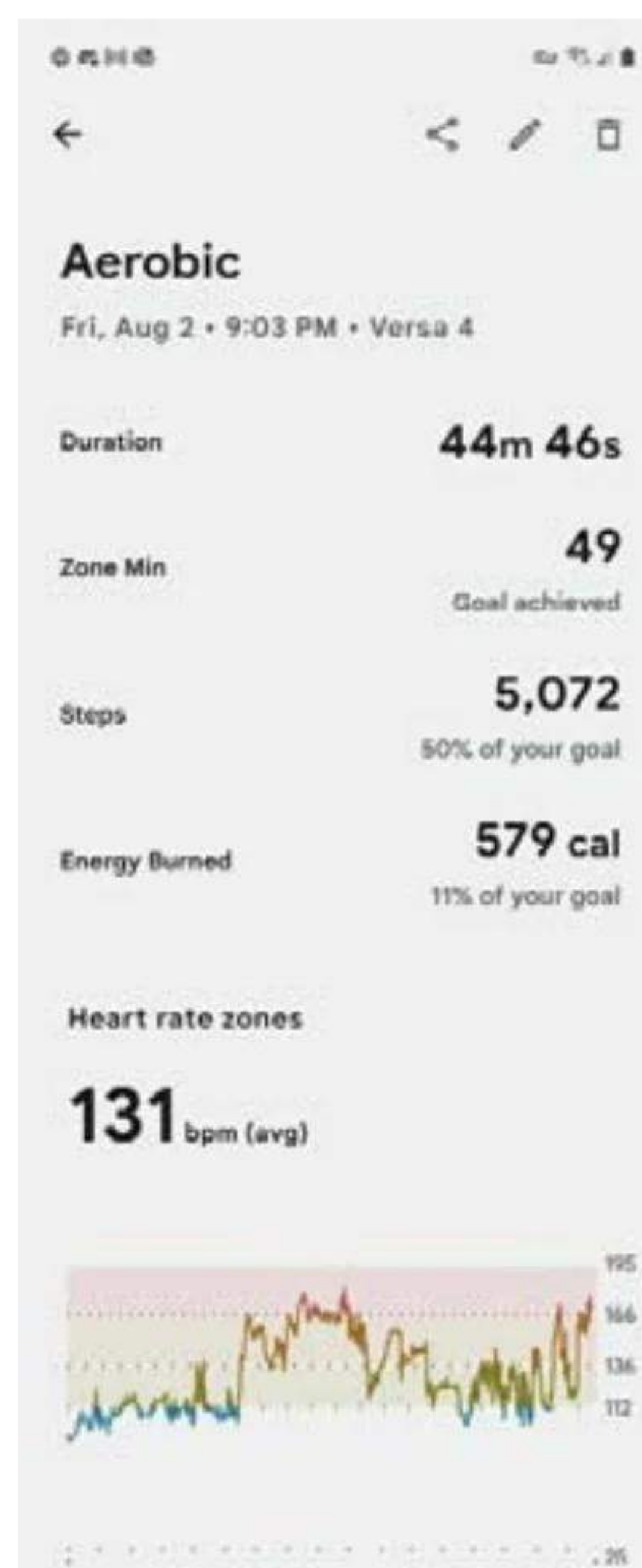
A workout session on *Ragnarock*'s higher levels can burn a surprising number of calories.

controllers are much heavier than a drumstick.

You can play it in a precise, technical way, but when you're getting into the rhythm, you'll find yourself jumping around and bobbing your head, doing your best hair metal rocker impression. At this point I should remind you to play VR in an empty room, or at least clear your path of any breakables.

The music selection is eclectic, if not exactly star-studded, but more or less all of it is fast-paced metal with a few classic rock-ish and punk songs in there. Metalheads might recognize bands like the Dwarven-themed Wind Rose or operatic fantasy metal Gloryhammer, with DLC from bands like the historical metal band Sabaton or a selection of nautical themes from Jonathan Young.

I've gotten a lot of mileage out of the custom song feature. It's a pain to get the music and the mapping accompaniment from my PC to my Android-powered headset. I



imagine the process is much simpler on the Steam version. But with the help of community site RagnaCustoms.com (fave.co/3XmP6XQ), a catalog of user-submitted songs and mappings, I've gotten dozens of custom songs on there. Folkish sea shanties and metal remixes of classic Disney songs are highlights.

According to my Fitbit, an hour of *Ragnarock* at high levels can burn from 800 to 1,000 calories. I think that's overly optimistic, but based on how much I'm sweating, it's definitely a lot more intense than walking for two or three miles in the same timeframe. And that same exercise session will get me most of the way to a 10,000-step goal.

USING VR TO GET MORE ACTIVE

Ragnarock isn't perfect. The version made for the Android-powered Quest 2 headset is far less graphically impressive than the Steam version, though I still prefer it since I can play it without a cable and while traveling. I also think the actual music mapping can be inconsistent. At different parts of the same song you might be "drumming" along to the song's melody, the singer's lyrics, or the real drum line, and which one is active seems to be kind of random.

But all those little nitpicks just disappear when I get into it. I start beating like a madman, looking like Animal the Muppet if I'm trying to beat my best score on one of my favorite tracks. I appreciate the fact that my viking rowers

always cheer when I hit the lightning shields... even if I've just missed a note and they don't actually get struck by Thor's lightning.

As I started to lose weight, I felt more emboldened to do more variable exercise, including lots of hiking and kayaking. At this point I walk uphill for a mile and a half to get to my neighborhood's water aerobics class and back twice a week. I kayak for over 30 miles in a day on a regular basis. But Ragnarock remains an easy and fun way to get moving without leaving my house, especially handy when the weather's bad. Sure, I could just walk on a treadmill. But playing a video game is more fun.

VR STILL HAS A LONG WAY TO GO

As much as I've enjoyed *Ragnarock*, I'm less bullish on VR gaming than I was two years ago. Facebook-Meta seems to be losing money hand over fist (fave.co/3XM1d2f) on the business that used to be Oculus, ever since everyone got a look at the "metaverse" and saw it for the unnecessary cash grab it was. Interest in the gaming side of things is still there, but there's less excitement.

Valve's newest game projects are conventional, non-VR titles (fave.co/3Tv5eW8), and even the developer of *Ragnarock*, WanaDev, is transitioning to a standard PC game (fave.co/3XkNHkA) for their next project. It's been six months since Apple entered the market (fave.co/3XkNyh2),

and despite lots of initial buzz, the Vision Pro seems to have disappeared from the tech space almost immediately. Granted, starting a product line with something that costs as much as a used car probably isn't going to spur adoption. But if Apple can't spur excitement in VR, who can?

The problems that VR had nearly a decade ago haven't gone anywhere. It has a high barrier to entry for a largely single-player format that doesn't appeal to everyone. It doesn't help that VR gaming by its very nature requires a good bit of open space even if you're stationary. Even people who can afford lots of living space aren't ready to keep a room totally empty for a niche hobby.

The marketing that makes a Vision Pro or a Meta Quest look like a wearable Holodeck from *Star Trek* isn't working now that most people have tried VR, or know someone who has. I think we'll need something of an iPod moment for VR to get hold in a more meaningful way—a cheap, lightweight headset, perhaps something like the XReal Air (fave.co/3XMkFeU), which could lean on a smartphone for processing power and battery, along with a "killer app" that doesn't yet exist.

Even so, I'll be hanging on to my Quest for quite a while. *Ragnarock* isn't a killer app, or a magical weight loss solution. But it's by far the best reason I can give someone to pick up a VR headset. It's just plain goofy fun that makes you sweat. And for me, that's all I needed to kickstart something much bigger. 



“Early detection gave us time to adapt together, as a family.”

If you're noticing changes, it could be **Alzheimer's**. Talk about visiting a doctor **together**.

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FROM PLACING THE CHARGE DOCK IN THE
RIGHT SPOT TO KEEPING YOUR HOME CLEAN,
WE'LL SHOW YOU HOW TO OPTIMIZE YOUR
ROUTINE. **BY MICHAEL**

8 ROBOT VACUUMS TRY THESE ESSENTIAL



CHARGING BASE IN JUST THE
OUR VAC'S BRUSHES CLEAN,
UPGRADE YOUR CLEANING
MICHAEL ANSALDO

VACUUM HACKS:

ESSENTIAL TIPS ASAP

Robot vacuums have become a staple in many homes, offering a convenient way to keep floors clean with minimal effort. But getting the most out of your robot vacuum isn't as simple as pressing "start" and walking away. A little strategy is needed to enhance its performance, extend its lifespan, and ensure your floors are as clean as possible.

Whether you're a new owner or a seasoned user, these practical tips will help you maximize your robot vacuum's effectiveness and make it a trusted household helper.

1. PLACE THE CHARGING DOCK IN AN ACCESSIBLE LOCATION

It might seem like a small detail, but the location of your robot vacuum's charging dock can make a huge difference in terms

of battery life and cleaning efficiency. Place the charging dock in an open, accessible area where the vacuum can easily return to recharge. Avoid putting it in tight corners or behind furniture, where the vacuum might struggle to get in and out or find its way back.

By giving it a clear path to the dock, you ensure that your vacuum is always charged and ready to go when you need it.

2. DECLUTTER AND SECURE LOOSE CABLES BEFORE CLEANING

Robot vacuums are designed to navigate around your home autonomously, but they aren't always adept at dodging clutter.

Before you send your vacuum to work, take a few minutes to pick up any loose items like toys, clothes, or cables that might be lying on the floor. These obstacles can cause

your vacuum to get stuck or might even damage the device.

Securing loose cables is particularly important, as they can easily get tangled in the vacuum's brushes, potentially causing malfunctions.

Decluttering your space before each cleaning will not only prevent interruptions, but it will also allow the vacuum to move more freely, resulting in a more thorough clean.



Placing your robot vacuum's charging dock in an open area will help optimize its battery life and ensure it's always ready to go.



Robot vacuums are designed to navigate autonomously, but they sometimes struggle with obstacles. Decluttering before cleaning can prevent it from bumping into things or getting stuck.

3. USE VIRTUAL BARRIERS AND NO-GO ZONES

Many robot vacuums come equipped with smart mapping technology and the ability to set virtual barriers or no-go zones through their companion apps. These features are incredibly useful for protecting delicate items or keeping the vacuum out of areas where it might get stuck.

For instance, if you have a room with lots of tight spaces or fragile objects, you can set up a virtual barrier to prevent the vacuum from entering that area.

This not only helps avoid potential mishaps but also ensures that your vacuum can focus on cleaning the areas that matter most without unnecessary interruptions.

4. SCHEDULE STRATEGICALLY FOR OPTIMAL CLEANING

A convenient feature of most robot vacuums is the ability to schedule cleanings. It works

best if you think strategically about when your vacuum should be running.

In most cases, the best time to schedule cleanings is during periods when your home sees the least foot traffic—this could be when you're out of the house for work, or during the night when everyone is asleep.

By scheduling your vacuum to clean during these low-traffic times, you minimize the chances of it being interrupted or needing to dodge obstacles, leading to a more efficient and thorough cleaning session.

Additionally, if you have pets, scheduling cleanings at times when they're less active can prevent the vacuum from getting tangled in pet toys or encountering accidents.

The key is to align the cleaning schedule with your household's routine to ensure the vacuum can work uninterrupted, leaving your floors spotless without you even noticing it's been at work.

5. ADAPT CLEANING MODES TO DIFFERENT FLOOR TYPES

Most robot vacuums boast cleaning modes that can be tailored to different surfaces, such as carpets, hardwood, or tile. It's crucial to utilize these modes according to your specific flooring.

On carpets, for example, you might want to select a mode with stronger suction to pull dirt and debris out of the fibers. On hardwood or tile, a gentler mode with a slower brush speed might be more appropriate to avoid scratches while still picking up dust and debris effectively.

Some advanced models can automatically detect the type of surface they're cleaning and adjust the mode accordingly. However, if your vacuum doesn't have this feature, taking a few moments to manually switch modes can make a big difference in cleaning quality.

6. DETERMINE YOUR IDEAL CLEANING FREQUENCY

Finding the right cleaning frequency for your home depends on several factors, including the size of your household, the presence of pets, and the amount of foot traffic your floors receive. There's no universal solution, but here are some general guidelines:

Daily cleaning: If you have pets, suffer from allergies, or your home experiences high foot traffic, daily cleaning is ideal. This routine helps to keep pet hair, allergens, and dirt at bay, ensuring that your floors are consistently clean, and your robot vacuum doesn't get overtaxed by high debris levels.

Every other day: For homes with moderate activity levels and no pets, cleaning every other day can be sufficient. This schedule helps keep your home clean while

also preserving the battery and extending the lifespan of your vacuum.

Weekly cleaning: If your home has low activity levels or there are areas that are used infrequently, a weekly cleaning might be all that's needed. This approach works well for guest rooms, formal living areas, or other spaces that don't see daily use.

Remember, more frequent cleaning doesn't necessarily mean better. It's about finding the right balance to keep your home clean without overworking your vacuum.

7. KEEP BRUSHES AND FILTERS CLEAN

It's important to perform regular maintenance to keep your robot vacuum running smoothly. Over time, the brushes and filters of your vacuum will accumulate dust, hair, and other debris, which can hinder its performance if not cleaned properly.

Most manufacturers recommend cleaning the brushes and filters at least once a week, but this can vary depending on how often you use the vacuum and the conditions in your home.

Start by removing the brushes and clearing any hair or fibers that have wrapped around them. For the filters, tapping them out to remove loose dust or rinsing them (if washable) can help maintain strong suction power. It's also a good idea to check the manufacturer's guidelines for any specific maintenance tips.

Regular upkeep of these components will extend the lifespan of your vacuum and



Regular maintenance of your robot vacuum's brushes and other components is essential to keep it cleaning effectively.

ensure it continues to clean your home as efficiently as possible.

8. DON'T FORGET SMART MAPPING AND LEARNING FEATURES

Many of the latest robot vacuums come equipped with advanced smart mapping and learning capabilities. These features allow your vacuum to create a detailed map of your home over time, which it then uses to navigate more efficiently. By taking full advantage of these features, you can significantly enhance your vacuum's cleaning performance.

For instance, once your vacuum has mapped your home, you can set specific cleaning zones or direct the vacuum to clean a particular room or area. This is especially useful if you only need to clean a high-traffic

area like the kitchen or living room without having the vacuum clean the entire house. Smart mapping also allows the vacuum to remember obstacles, reducing the chances of it bumping into them or getting stuck.

Some models even allow you to save multiple maps, which makes them ideal for multi-level homes. This way, you can move the vacuum to a different floor, and it will know exactly where to clean without needing to map

the area all over again.

The more your vacuum learns about your home's layout, the better it becomes at navigating efficiently and covering every inch of your floors.

THE FINAL SWEEP

Embracing the convenience of a robot vacuum is about more than just automating your cleaning routine—it's about enhancing the way you maintain your home.

By approaching your vacuum's usage with a bit of strategy, you can unlock its full potential and enjoy a home that's consistently clean without the usual hassle.

As you experiment with different settings, schedules, and features, you'll likely discover new ways your vacuum can work for you and be a better ally in keeping your home tidy. 

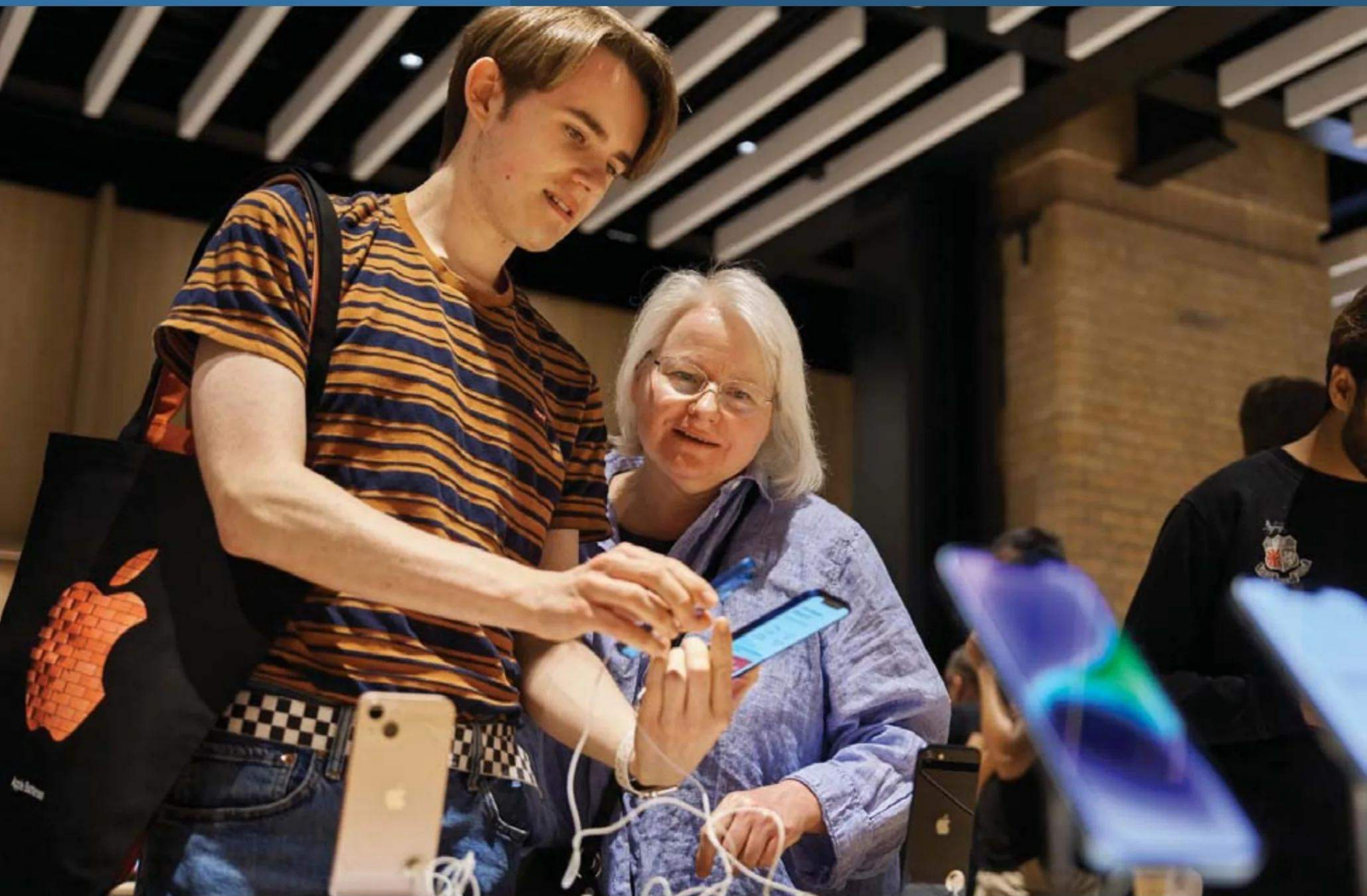


Who adopted who?

Adopt a teen.
You can't imagine the reward.



A D O P T U S K I D S . O R G



7 ways to save serious cash on tech

Don't want to wait for deals? You can still save big on tech all throughout the year using these sites. **BY JARED NEWMAN**

As a tech journalist who also runs a free tech advice newsletter (fave.co/47qcSqx), I maintain a pretty lean operation. I'm always buying more tech for "research purposes," but I'm reluctant to pay anything close to full price when I do.

Waiting around for deals is one way to defray the costs. But what if I need something

now? Or what if the deals aren't good enough? That's when I turn to the used, refurbished, and open-box markets.

If you know where to look—and what to look for—you can essentially will your own price cuts into existence and still get good-as-new gadgets.

Here are my go-to sources for acquiring used, refurbished, and open-box gadgets on

the cheap. At the end of this article, I also share a few tips and warnings to be aware of before you go shopping.

This story first appeared in Advisorator, Jared's weekly tech advice newsletter. Sign up to learn new tech tricks every Tuesday.

BEST BUY'S OPEN BOX DEALS

For an easy way to save money on practically any tech product, click the **Open Box** option on any Best Buy (fave.co/4e6qSrX) product page. This takes you to a Buying Options section with discounts for returned items. The Open Box Excellent option promises like-new condition with all original accessories.

The best thing about Best Buy's open-box deals is that they factor in current sale prices. For example, if a brand-new iPad is

on sale for \$100 off, you still get that discount on open-box models. (I recently saved \$194 on an iPad Mini using this method, and while the box it came in was a bit worn, the tablet itself was pristine.)

The Best Buy route pairs well with big-ticket items that are often on sale, such as laptops, monitors, TVs, tablets, and Apple Watches. If the quality of an open-box model isn't to your liking, you have 15 days to return it for free (either in store or by mail). Open-box products also include a standard one-year warranty (fave.co/3zm9Ab8) in case anything goes wrong.

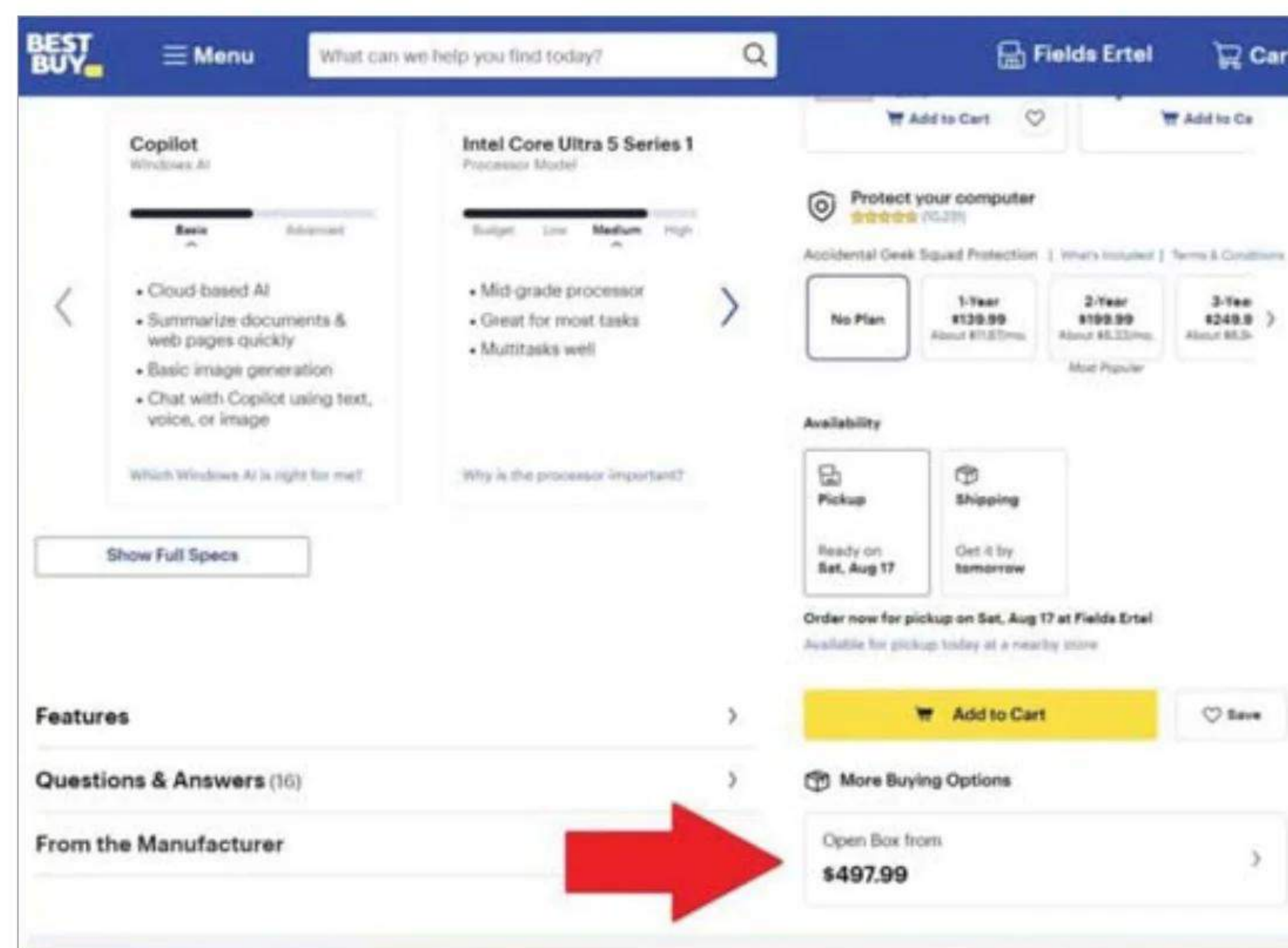
AMAZON'S USED SECTION

Like Best Buy, Amazon (fave.co/3XqGFuM) also offers used options on product pages—but unlike Best Buy, Amazon's used products

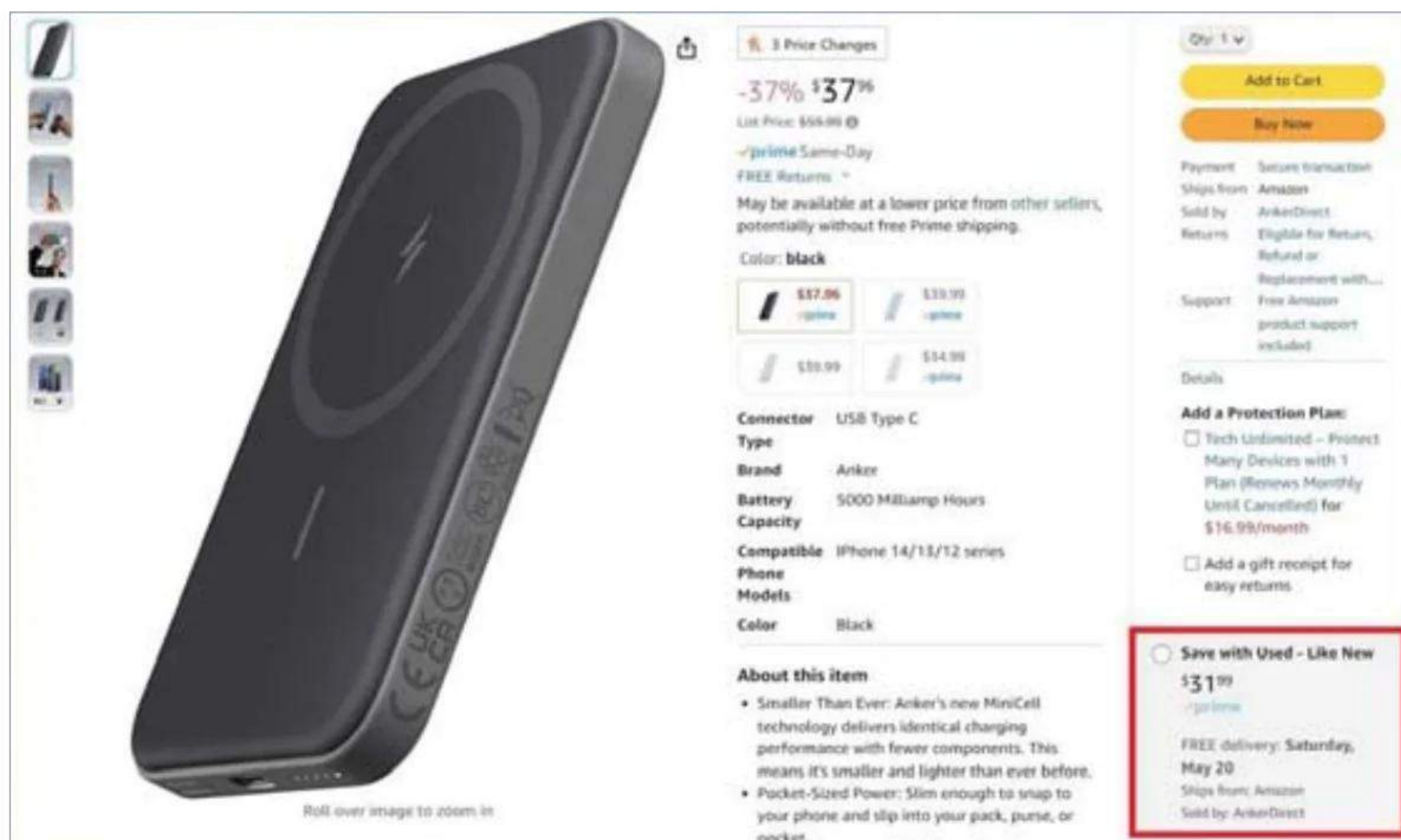
are seldom eligible for whatever deals are going on for their brand-new counterparts.

Even so, I've found the used options to be worthwhile when I need some sort of accessory—like a USB hub or Ethernet splitter—and can't wait around for a sale.

Amazon's 30-day return policy still applies to used gear, and the ability to drop off returns at UPS or Kohl's



Best Buy's open-box deals factor in current sale prices.



Amazon's 30-day return policy still applies to used gear.

stores is convenient. However, note that Amazon doesn't offer any warranties beyond the return period.

Just look for the **Save with Used** option on any product page. If buying from a third-party seller, check that they have a high number of positive ratings. Also, note that some options may not include Prime shipping.

SWAPPA FOR CHEAP USED GEAR

Swappa (fave.co/3zwQjUt) is an online marketplace for buying and selling used gadgets. Sellers list their devices for however much they want to charge, and buyers can browse those listings to find products by type, brand,

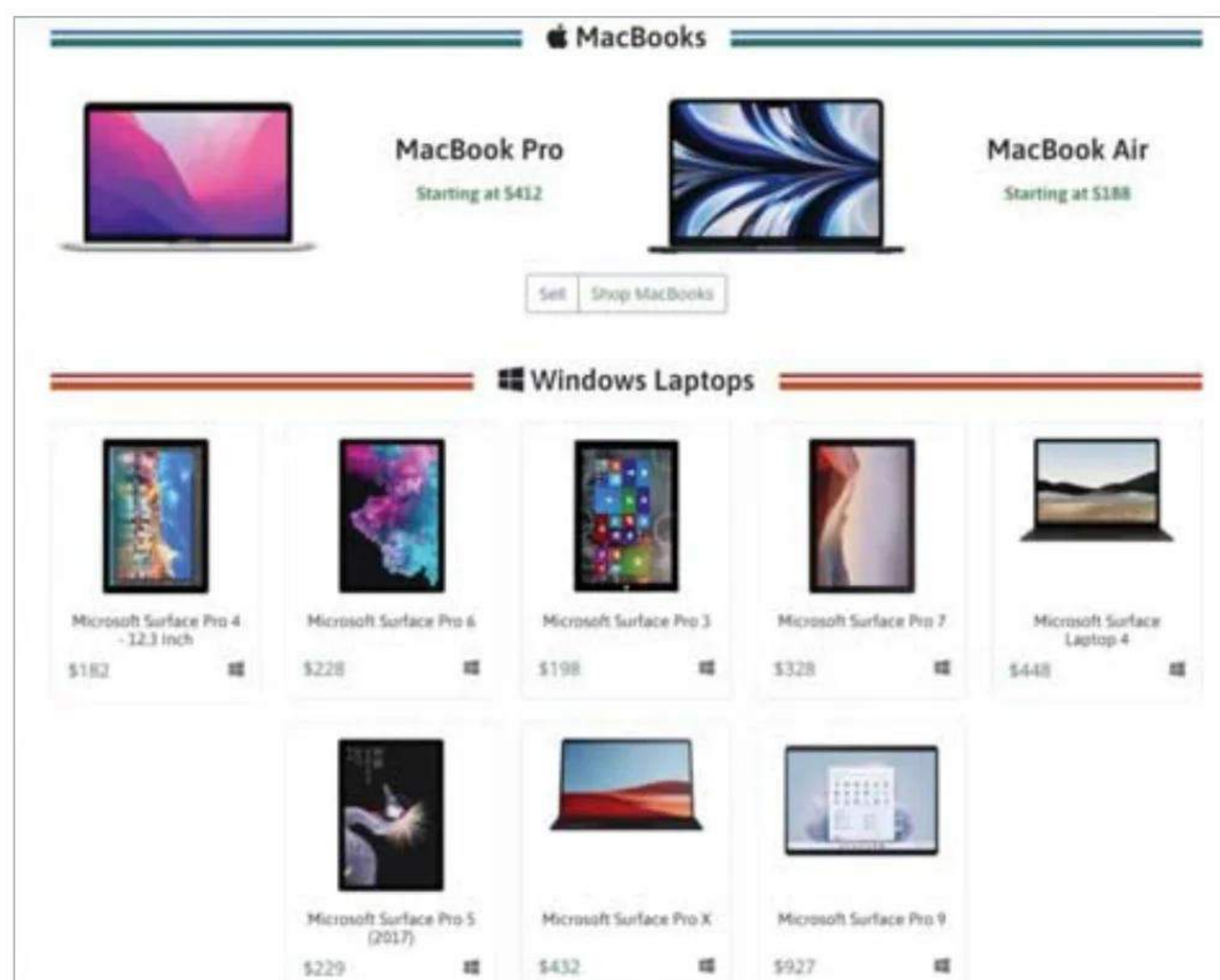
condition, color, specs, and so on.

While Swappa is best known for smartphone deals, don't sleep on its laptop page (fave.co/3MOGUee), where you'll find big discounts on MacBooks, Windows PCs, and Chromebooks. The

site's smartwatch (fave.co/3Zsvm82) and tablet (fave.co/3ZmmQY0)

sections are worth a look as well.

The big caveat with Swappa is that you don't get any kind of warranty with your purchase, and most sellers won't accept free



Swappa has big discounts on laptops and smartphones.

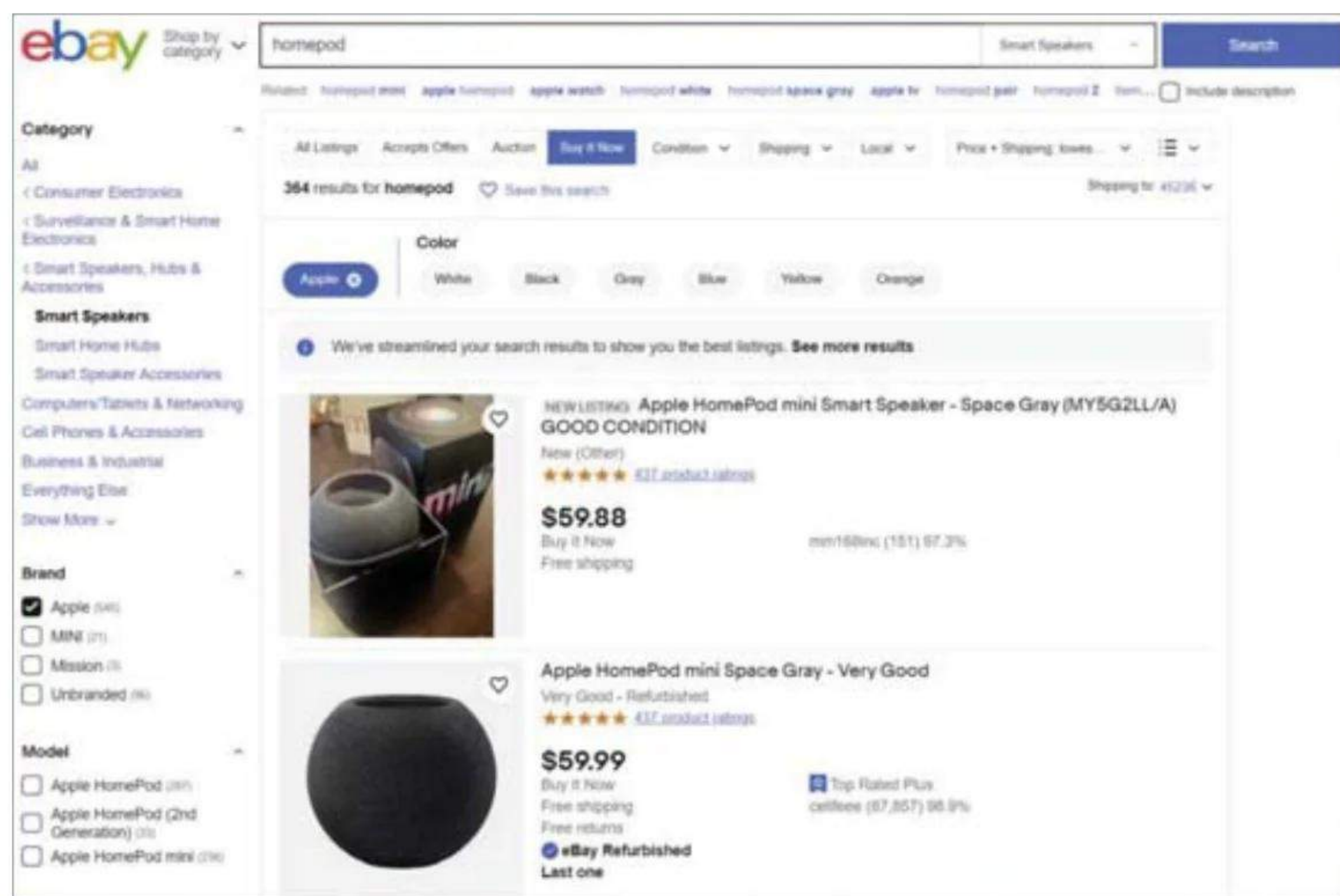
returns unless the item isn't as described. (Even then, the back-and-forth exchange can be a pain.) If you're willing to shoulder that risk, the savings can be significant.

Tip: While Swappa doesn't have a formal counter-offer feature, you can try haggling with the Contact Seller option. You'll need to act fast if they do lower the price, though, because anyone else who sees the listing might jump on it before you do.

GOOD OLD EBAY

eBay can still be a great way to get gadgets for less, but finding the best buying options can take some work. eBay's default search algorithms don't always show you the best deals, and its auction listings rarely end up cheaper than buying items outright.

So my approach to shopping on eBay is this: Search for a product using as many descriptors as possible, select the **Buy It Now** filter on the results page to hide auction listings, then sort the results by **Price + Shipping: Lowest First**. Then I scroll through the results and use additional filtering options to find exactly what I'm after.



eBay can still be a great way to get gadgets for less.

My best recent haul using this approach was a gently worn Samsung Galaxy Watch4 for \$60 versus the \$200 it would've been at Best Buy. I also grabbed a couple of Anker MagSafe power banks for less than \$25 apiece, which was about \$15 off street price.

When shopping on eBay, beware of listings that say things like "PLEASE READ" or "LOOK," as these items usually have significant defects. Avoid any listings that say "parts only."

OTHER OPTIONS

- RefurbMe (fave.co/4dgzJq0) is a helpful site for searching across various sources of refurbished gear, including Back Market (fave.co/3Tqu2yj), Gazelle (fave.co/4eq6WzU), and Apple.

- Back Market (fave.co/3Ty03Vj) itself is worth a callout, as all its products include a

one-year warranty (though its prices tend to be higher as a result).

- You can try your luck on Mercari (fave.co/4eqrF6R), which is a used marketplace not unlike eBay, but I've seen some shady behavior there. If a seller has no ratings or the price seems too good to be true, skip it.

A FEW TIPS AND WORDS OF WARNING

Buying used, refurbished, or open-box devices will always carry more risk than buying brand-new ones. But if you're smart, careful, and patient, then you can mitigate a lot of that risk and shop with confidence. Here are several things that you should be aware of before you pull the trigger on a used, refurbished, or open-box purchase:

Warranty coverage: Used products generally don't include the standard one-year manufacturer's warranty you get when buying new, but some sites let you buy additional warranty coverage.

Battery health: Device batteries wear down over time, so used gear may not last as long on a charge compared to brand-new gear. You can either ask about battery health before buying or check battery health yourself after receiving the item. (See instructions for checking battery health on Windows [fave.co/3j1YK1E], Mac [fave.co/4d3FxTD], Android [fave.co/3B3AeX1], and iOS [fave.co/4ergJ8Y].)

Unscrupulous sellers: While most of my eBay and Swappa transactions have been pleasant, I've run into a few scenarios where the product was in worse shape than advertised. Sellers will typically work with you to avoid negative ratings, but this can still be a hassle.

Grossness: For reasons best left unspecified, you should avoid buying used earbuds unless they've been professionally cleaned.

LOOKING TO SELL? TRY THESE SITES

Making money from your own used gear is easier than you might think, plus you'll be putting it back into circulation for other folks to use. Here are some options worth knowing about:

- Flipsy (fave.co/4d87UzR) and SellCell (fave.co/3MOUGxk) aggregate buyback prices from a wide range of sources, so you can find the optimal selling prices for used phones, tablets, computers, and more.
- Swappa (fave.co/3zwQjUt) is less chaotic than eBay for selling old tech directly to other users. I've had positive experiences.
- Staples (fave.co/4gnwBet) will give you rewards points for recycling tech, which you can do to reclaim value out of keyboards, printers, and other accessories that have little resale value otherwise. (You'll need to join Staples' rewards program [fave.co/4gpf8SZ] first to take advantage.) 

Did you know Windows 11 has a God Mode? Here's what it can do

God Mode is a hidden feature that makes it way easier to tweak various Windows settings.

BY JON MARTINDALE



Ah, it's good to be a god. That's what they say, right? While you may not be a deity in your own right, you can be something of a god when using Windows 11—by enabling the hidden God Mode.

God Mode isn't unique to Windows 11. In fact, it's one of those little-known functions that were carried over from previous Windows versions, and it only persists to this day for who knows what reason.

With God Mode, you're able to open up the operating system and tweak settings that are normally stashed away beyond reach. You're able to tinker and tweak to your delight, and there are some useful commands and tools for everyday users as well.

Becoming one of the pantheon isn't as difficult as you might think. With a few clicks of the mouse and a few taps on your keyboard, you can enable God Mode right now—no great sacrifices necessary.

Keep reading to learn exactly what God Mode is, how to enable it, and some of the cool things you can do with it.

WHAT IS GOD MODE IN WINDOWS 11?

The name “God Mode” is far more dramatic than the feature itself. It might conjure up images of uber-administrative powers, but in reality God Mode is nothing more than a special folder that contains shortcuts to special settings and options within the Control Panel.

This unique God Mode folder can be kept wherever you like so you can access it at your convenience, or you can individually relocate the shortcuts from within the God Mode folder elsewhere—to the Start menu, taskbar, or desktop, for example.

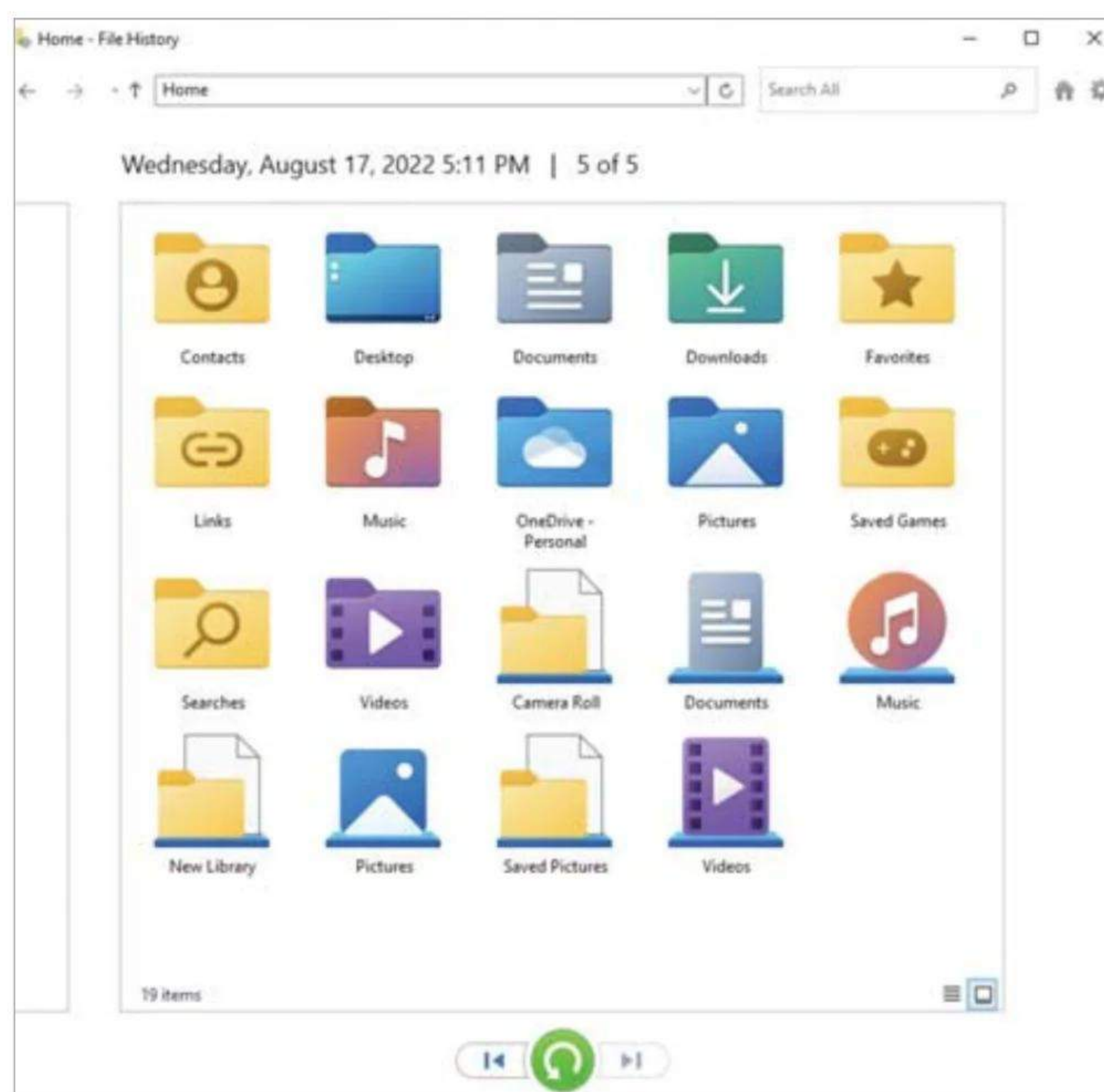
Does that sound game-changing? Maybe not. But it’s definitely useful, especially as Microsoft moves to deprecate the Control Panel (fave.co/4cY68Bq), making it harder to find the Windows 11 settings you want to adjust.

WHAT CAN YOU DO WITH GOD MODE?

Activating God Mode in Windows 11 grants you instant access to over 200 different

settings and options. A lot of them might be mundane or situational, but here are some of the niftier things you can do:

- Manage BitLocker drive encryption (fave.co/4gwi2Wf), whether that’s suspending protection, backing up your BitLocker recovery key, or turning BitLocker protection off entirely.
- Manage your network settings (fave.co/48TLX5H), whether that’s connecting to a new network, adjusting share settings, viewing network status and tasks, and troubleshooting network issues.
- Manage your energy settings (fave.co/3XJRRUA), whether that’s adjusting battery options, changing what action is taken when



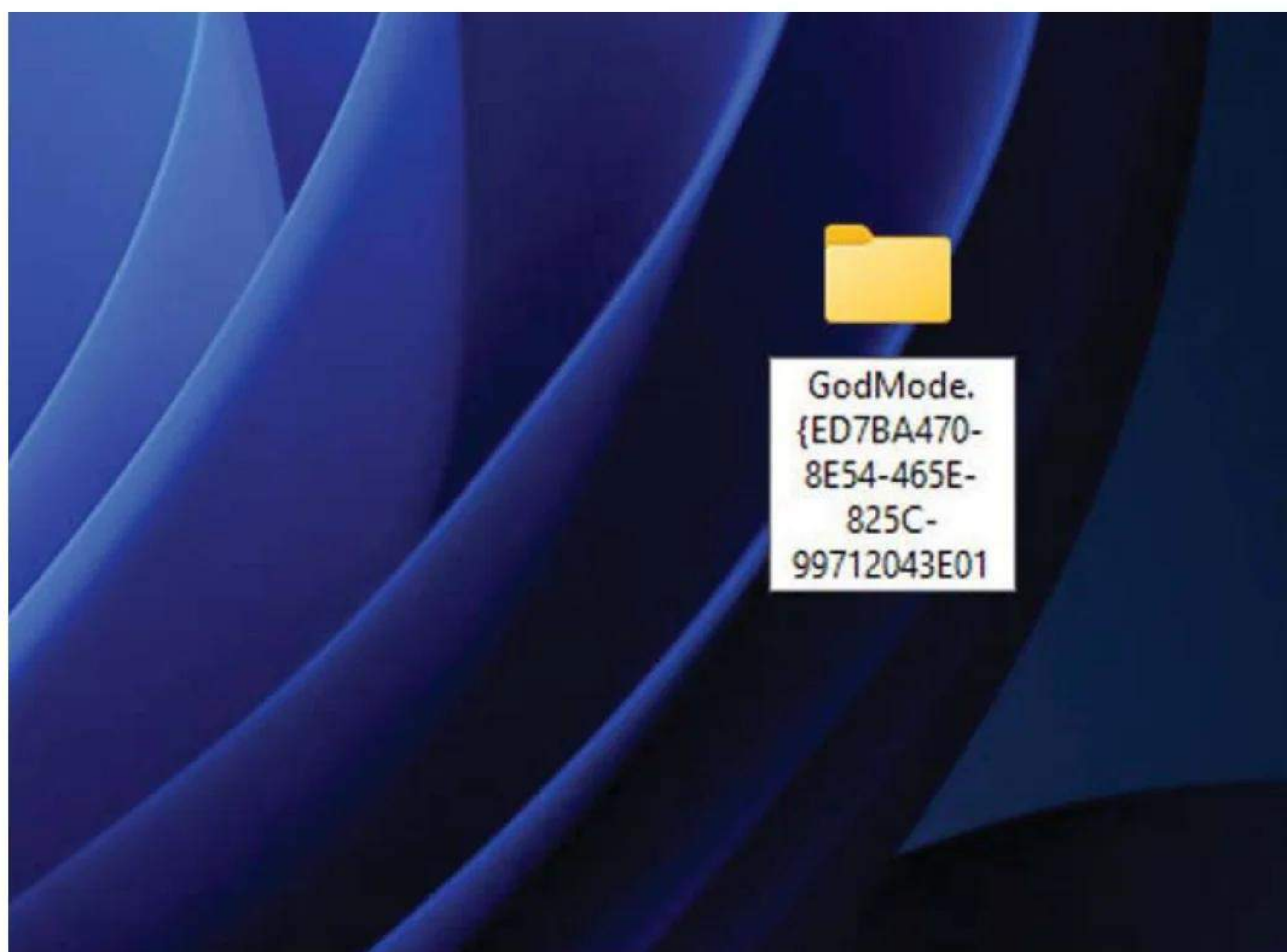
File History is one of the settings you can access in God Mode.

your laptop lid is closed, changing what the power buttons do, switching or editing your current Power Plan, and changing sleep behavior.

- Add Bluetooth devices, change your default printer, set up USB peripherals, and launch Device Manager.
- Back up your files with File History (fave.co/3HKltbC) and restore files to previous versions (this is only available after File History is enabled).
- Re-associate different file types with different apps, show or hide files and folders, show or hide file extensions, and change search options for files and folders.
- Fix your computer's date and time, toggle automatic daylight savings adjustments, and add clocks for multiple time zones.
- Adjust dozens of accessibility settings, like changing the Narrator's voice, toggling Magnifier, optimizing the display for blindness, enabling Screen Reader, and disabling unnecessary animations.

HOW TO ENABLE GOD MODE IN WINDOWS 11

In Windows 11, God Mode isn't really a feature that you enable. It's more like an Easter egg



Folder on Windows desktop enabling God Mode feature.

that comes to life if you happen to perform the right sequence of actions—except in this case you actually gain access to a bunch of interesting things you can do. Here's how to access God Mode in Windows 11:

1. Create a new folder on the desktop. To do this, navigate to the desktop, right-click an empty area, and then select **New > Folder** in the context menu.
2. Right-click the newly created folder and click the **Rename** button. Alternatively, select the newly created folder and hit **F2**.
3. Rename the folder to the following, exactly as written, including the period and curly braces: **GodMode.
{ED7BA470-8E54-465E-825C-99712043E01C}**
4. Click **Enter** or click away from the folder to apply the rename.

As soon as the folder is renamed, the folder icon will change to the default folder icon or to the Control Panel icon. Either way, you've now successfully enabled God Mode in Windows 11!

USING GOD MODE

Using Windows God Mode is even easier than enabling it in the first place. Just double-click the God Mode folder to open up all the shortcuts, and then double-click the shortcut that you want to use. Optionally, you can drag and drop individual shortcuts to your desktop or some other folder where you can thereafter have ready access to them.

You can also create additional shortcuts for each setting in the God Mode folder (if you want access to them in multiple locations)

by right-clicking each one and selecting **Show more options > Create shortcut**.

If you find it a bit hard to navigate the category-based organization of the God Mode settings, you can right-click an empty area of the folder and select **Group by > Name** to list the options alphabetically.

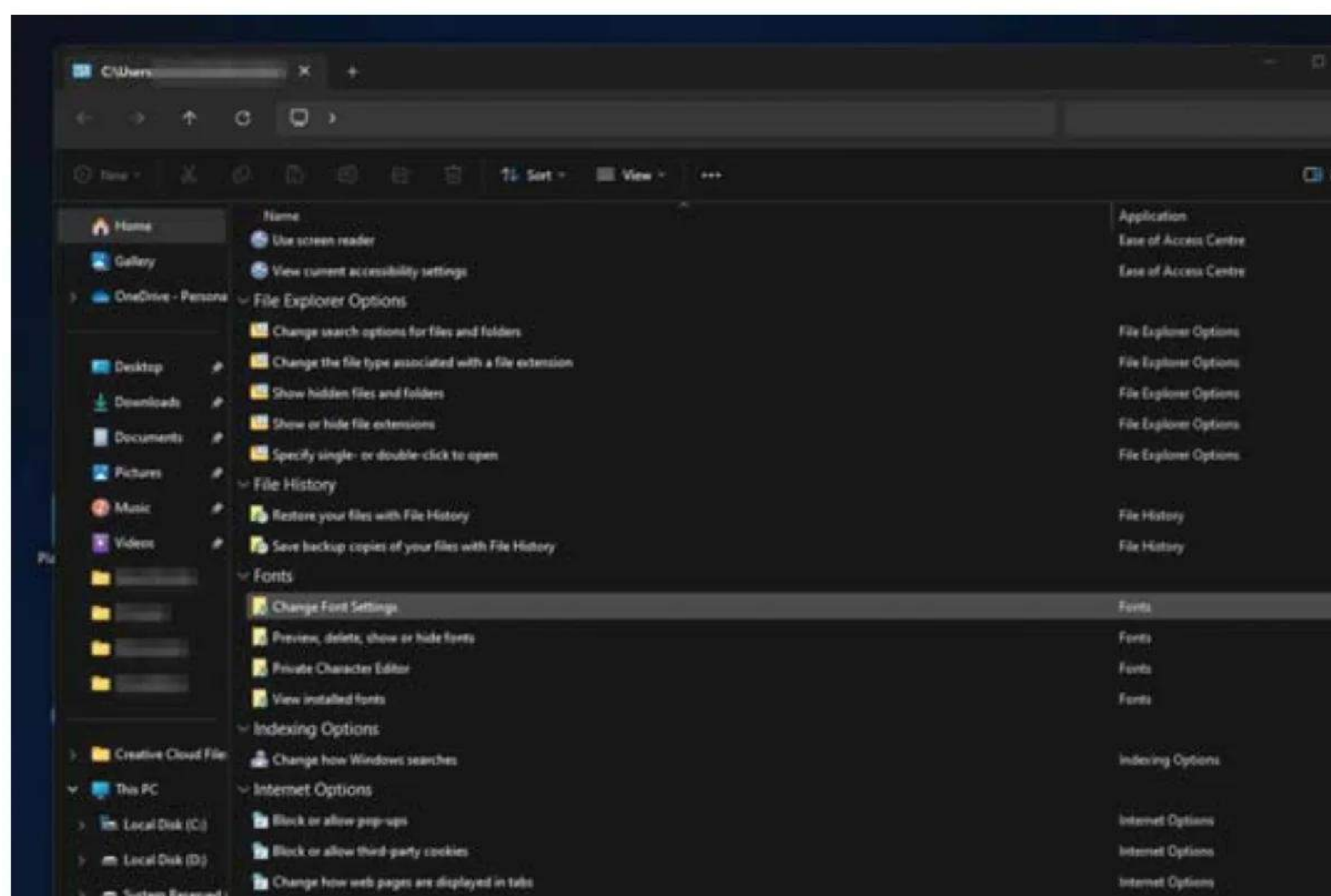
Would you rather view the settings as icons instead of text links? Right-click anywhere in the folder and select **View**, then choose your preferred icon size in the context menu.

HOW TO DISABLE GOD MODE

Don't want to use God Mode any more? No trouble. All you have to do is select the God Mode folder and click **Delete**. Alternatively, you can right-click on the folder and select **Delete** in the context menu.

If you moved the God Mode settings shortcuts to other folders and locations, simply delete those shortcuts.

You can always re-enable God Mode anytime by following the above steps again, or you can save your favorite shortcuts and delete the main folder. It's entirely up to you. 



Windows 11 God Mode enabled and settings you can change.



Maximize your cloud storage with these five tools and tricks

Online storage can save and synchronize files automatically. However, as storage space is limited, you should use convenient tools to clear out superfluous files. **BY ROLAND FREIST**

It's the same thing every vacation: The photo collection grows and grows and grows, with dozens of photos added every day. The easiest way to back up your photos is via cloud storage; you can then store them in Apple's iCloud, on Google Drive, on Microsoft OneDrive, or in the online storage of a third-party provider.

However, this is only a temporary solution, because after your vacation you should

review the pictures on your home PC, sort out duplicates and unsuccessful ones, and edit the others if necessary. If you only have the limited data quota of free storage available, you will have to move files saved online to your PC from time to time anyway and archive them there.

When moving and deleting files in the cloud, you can utilize the synchronization folder that these cloud storage services create in

Windows. The synchronization folder that lives on the local PC hard drive is integrated as a separate directory in Explorer.

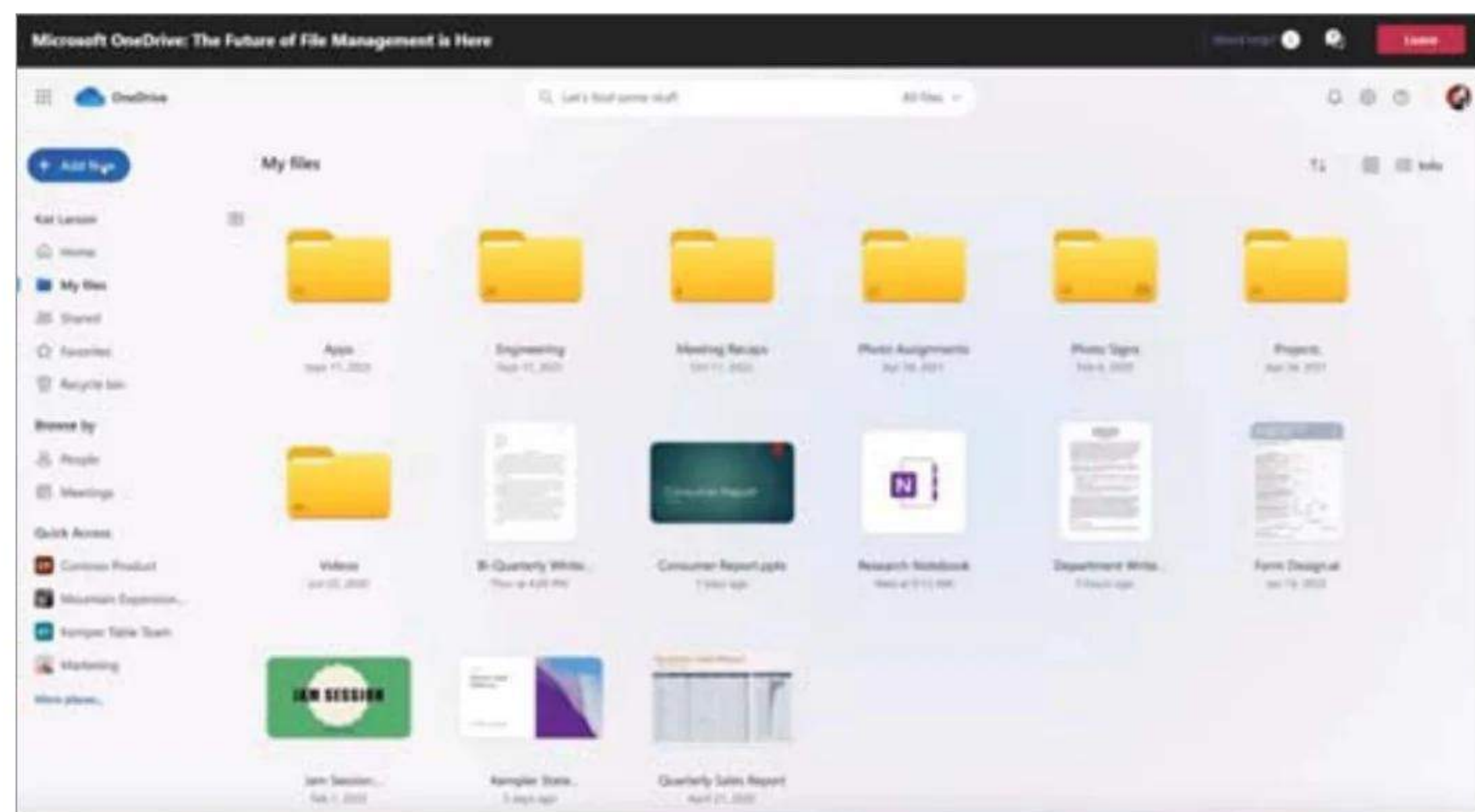
All actions you perform on the files there are also performed on the cloud storage. So if you delete a file in the local synchronization folder, it will also be deleted in the cloud. The local version ends up in the Windows recycle bin, the cloud copy in the cloud storage recycle bin.

SELECT AND DELETE FILES THAT ARE NO LONGER REQUIRED

The safest way to select and delete unnecessary files is to call them up and view them individually. However, this is simply illusory when there are often several thousand files in the cloud, so you have to proceed systematically, for example by sorting the files by date. To do this, open your cloud storage and click on the column header which, depending on the cloud service, may be labeled “Recording date” or simply “Date.”

Place the oldest files at the top and check from top to bottom which files you want to keep, which can be deleted, and which should only be backed up locally.

In the same way, you can also filter out the biggest space hogs, such as recorded videos.



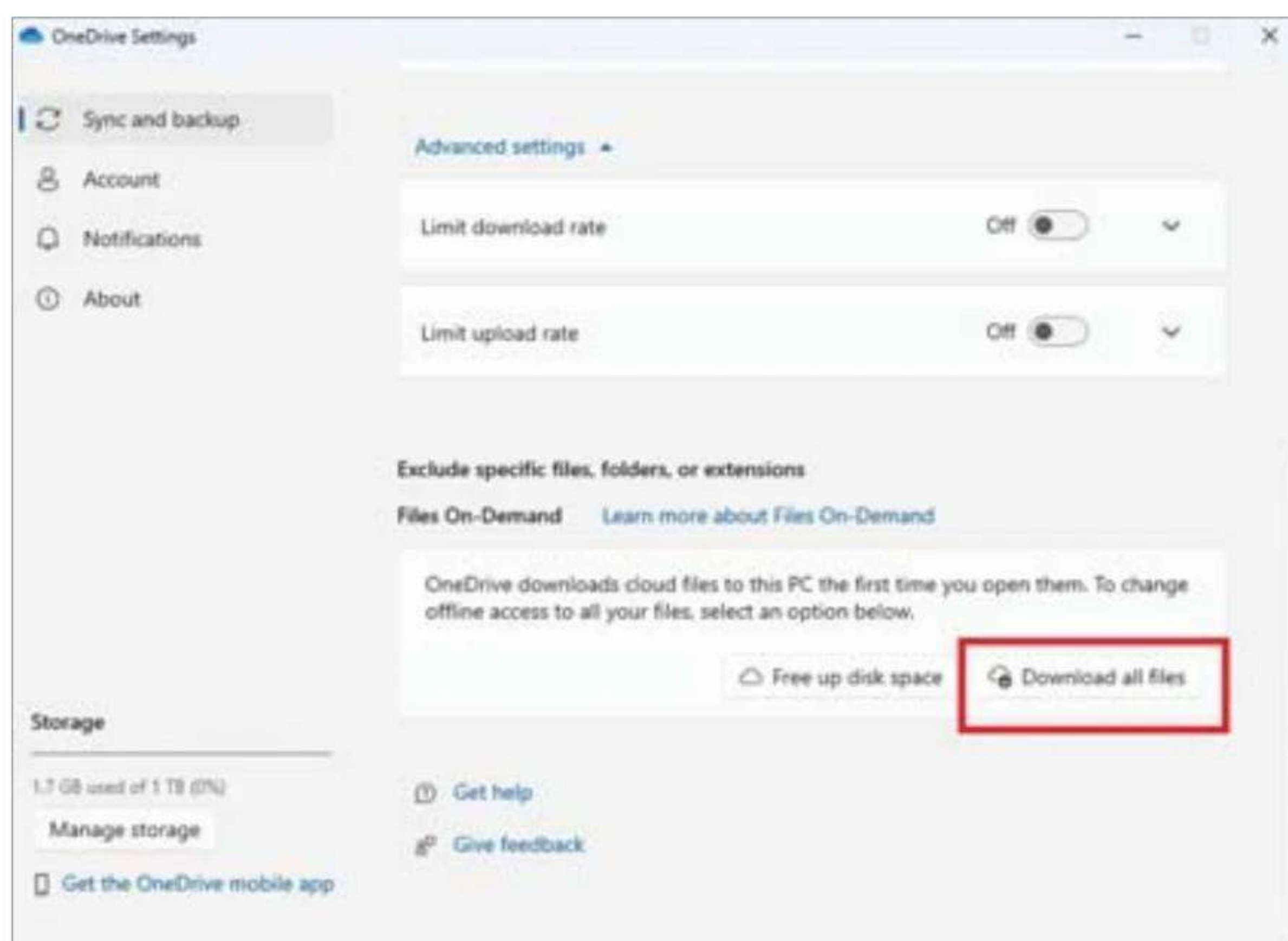
You can organize your cloud files in Explorer or in the browser by creation date and then go through them to electively delete files that are no longer required.

Another space hog is the shares of other cloud users that are synchronized with your account. In this way, the files from other online storages are added to your storage quota. If you stop accessing these shares, your available free storage space will suddenly increase.

ONEDRIVE: BACK UP ALL CLOUD CONTENT TO YOUR PC

If you use Microsoft OneDrive, you can back up all existing online content to your computer with just a few clicks. To do this, open the OneDrive app and right-click on the cloud icon at the bottom of the taskbar. In the following window, click on the gear icon, then on “Settings.”

Go to “Sync and backup,” scroll down and click on the “Advanced settings” link.



You can use the OneDrive Windows program to download all files from the cloud service to your computer's local hard drive in one go.

Scroll down again and click on the "Download all files" button. After you have confirmed the warning message with "Continue," OneDrive will copy all content on the local hard drive to a directory of your choice.

You can then delete the original files on OneDrive. To do this, open the OneDrive synchronization folder on your PC in Explorer, select the files and folders, and move them to the recycle bin. This action is now automatically repeated in the cloud storage.

You can also automate this task and regularly delete files both on the local computer and in the cloud according to a schedule. However, be aware of the associated risk: If you have not backed up the cloud files elsewhere beforehand,

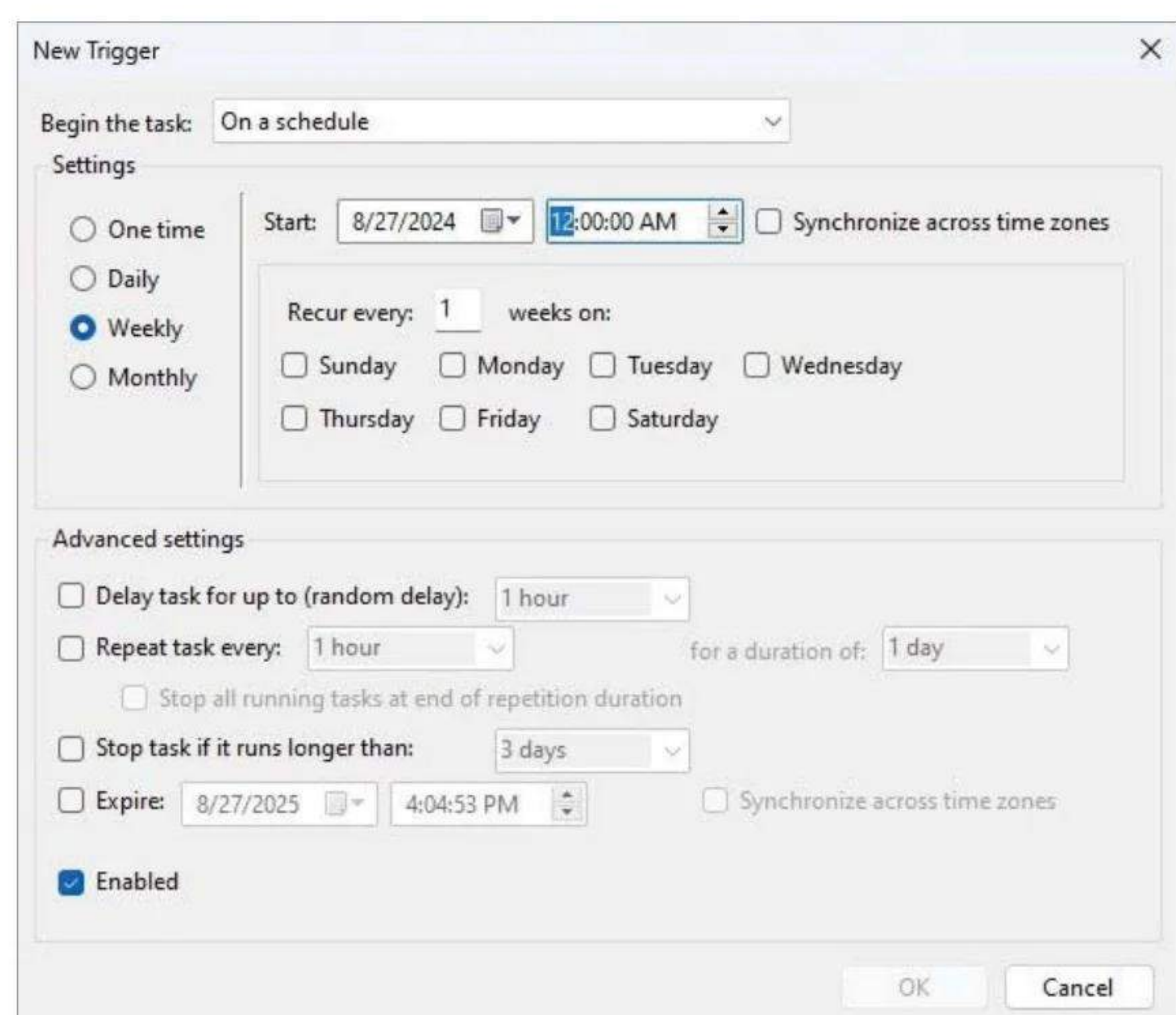
any files you still need will also disappear in this way—that's how synchronization works!

DELETE CLOUD FILES VIA WINDOWS TASK SCHEDULER

It doesn't matter whether the files are stored in OneDrive, Google Drive, or elsewhere in the cloud—you can use Windows Task Scheduler to delete cloud files automatically.

The prerequisite is that the cloud service creates a synchronization folder via an app in Windows Explorer.

Otherwise, a tool like Raidrive (fave.co/46lPlp8) can help—it integrates many services as drive letters.



Use Windows Task Scheduler to define a schedule according to which the cloud folders are automatically and regularly deleted.

To schedule tasks, you first need a batch file with the delete command. Open the Windows editor and enter the command

del /q /s D:\OneDrive\Photos*

Replace D:\OneDrive\Photos with the path to the sync folder of your cloud storage. Save this file under any name—for example, as *cloudddelete.bat*—in any folder, such as C:\Temp, with the extension .bat.

To call up the task scheduler, type **task** or **taskschd** in the search field of the taskbar and click on the displayed hit. Select “Task scheduler (local)” on the left-hand side and click on Action > Create task.

Give the task a name and activate “Run whether user is logged on or not.” Accept all other settings in this window.

However, do not click on “OK” now, but switch to the “Trigger” tab. Here, click on “New,” leave the default setting “On a schedule” and select under “Settings” how often the deletion action should be carried out.

Then define a start time for the task under “Start,” confirm with “OK” and continue to the “Actions” tab in the previous “Create task” window.

Click on “New,” accept the default setting “Start program” and enter the command C:\Windows\SysWOW64\cmd.exe under “Program/Script” and—if

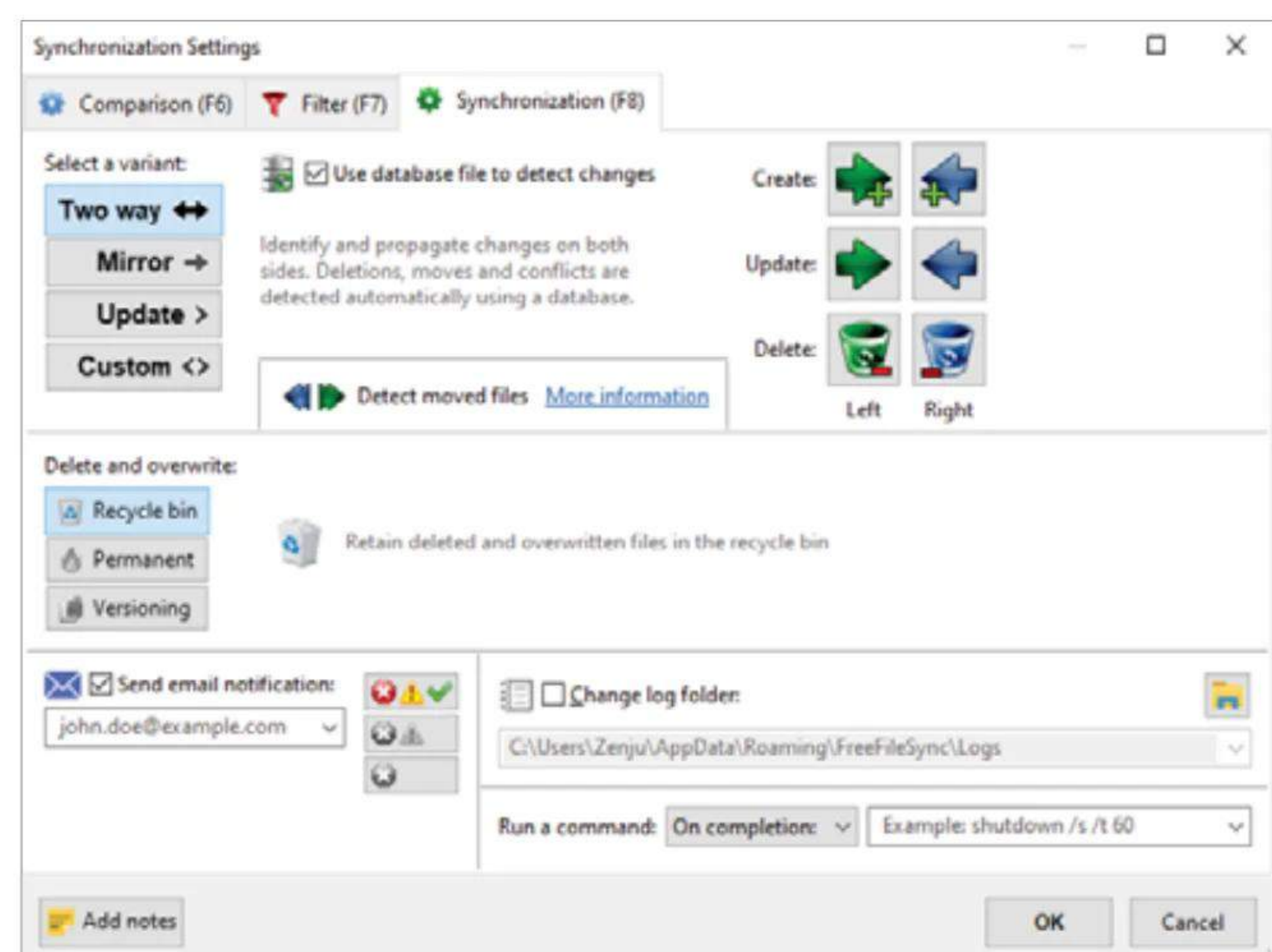
you have used our example—the command “Add arguments (optional).”

/c „C:\Temp\cloudddelete.bat”

After you click on “OK,” the task scheduler asks once again whether everything is correct. Answer the question with “Yes” and close the window with “OK.” The new task now appears in the “Task scheduling library” and is automatically executed according to the schedule.

SYNCHRONIZING WITH FREE FILE SYNC

You can also use the open source software FreeFileSync ([fave.co/3Bani1t](https://www.freefilesync.org/)) to automatically move files of certain types from one folder to another according to a schedule.



Files in Free File Sync offer to move the source folder in its configuration settings under Versioning, but it is actually a copy action.

However, the name of this process in the software is not quite correct. This is because the files are not actually moved but copied: The source files are therefore retained. This also applies if you select "Versioning" in the "Synchronization settings."

So if you select FreeFileSync to transfer the photos from your cloud storage to your local hard drive, you will also need a program to delete the original files afterward.

CLEAN UP CLOUD STORAGE WITH THE FREEWARE ERASER

Alternatively, you can remove folders automatically with Eraser (fave.co/47tXTvD). The program is actually designed to permanently delete empty hard drive areas so that the data can no longer be restored. However, thanks to an in-app task scheduler,

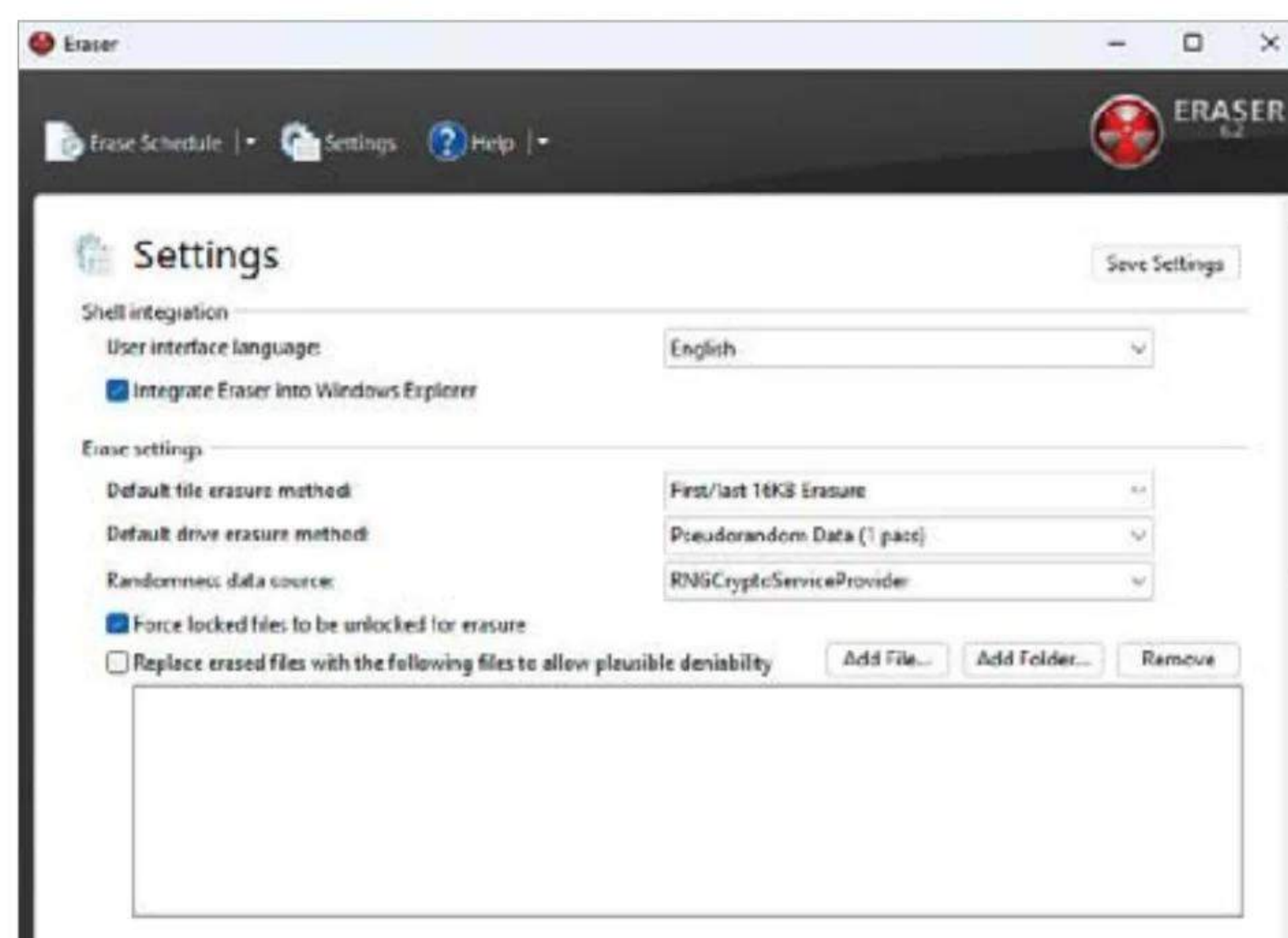
it is also suitable for regular deletion processes in your cloud storage.

After starting the program, first go to "Settings." Change the default settings for the erasure method: Set the simple and fast "First/last 16KB Erasure" as the "Default file erasure method." Then apply the settings by clicking on "Save Settings."

Click on the downward-pointing arrow next to "Erase Schedule" at the top of the toolbar and then on "New Task." Give the task a name of your choice and tick "Recurring" underneath. Click on "Add Data" and change the setting next to "Target type" to "Files in Folder" in the next window.

Now click on "Browse" next to the input field under "Settings" and find the cloud folder that is to be cleaned up regularly—Raidrive with a drive may also help here. In Eraser, remove the tick next to "Delete folder if empty" so that the folder structure remains untouched. Close the window with "OK" and switch to the "Schedule" tab.

Set a time and specify how often and on which days Eraser should carry out the deletion process. After you click on "OK," the configuration is complete and the program is ready to use. Eraser enters itself into the Windows autostart folder so that it is automatically activated when the operating system boots up. 



In the Settings section of Eraser, it is best to set a simple method for the deletion processes for the cloud storage.

Phone scammers are using faked AI voices. How to protect yourself

Modern AI tools can clone almost anyone's voice—and they're being used to scam people. **BY ARNE ARNOLD**

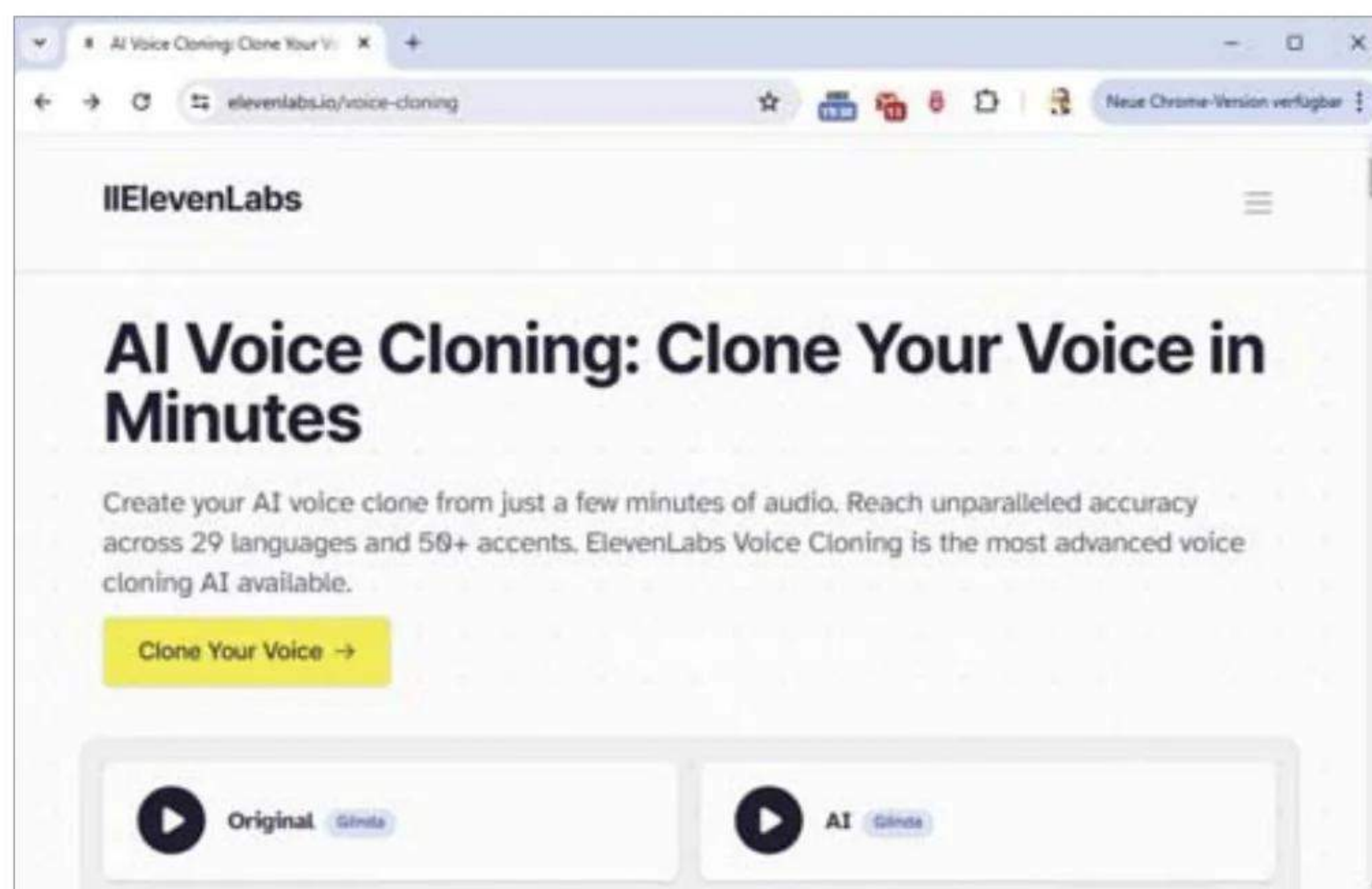


Never before has it been easier to clone a human voice. New AI tools can take a voice sample, process it, copy it, and say anything in the original voice. It's been a thing since as early as 2018, but modern tools can do it faster, more accurately, and with greater ease.

Don't believe it? OpenAI, the artificial intelligence company behind ChatGPT, presented a project this year that showed how it's possible to clone a voice with nothing more than a 15-second recording.

OpenAI's tool isn't yet publicly available and it's said to have security measures in place to prevent misuse. However, Eleven Labs (fave.co/47tdbRw) offers a similar service—you can clone a voice from a one-minute audio sample for just \$6—and this one *is* available to everyone.

You can see how this might be abused. Scammers and fraudsters can use phone calls and videos uploaded to social media to obtain voice samples from almost anyone, and then clone those voices for use in scams.



Eleven Labs offers to clone a voice for just \$6. The result isn't perfect, but it's good enough to trick people.

One rampant example is the grandparent scam (fave.co/3XwIN5n): A scammer calls an elderly person and pretends to be their grandchild via voice cloning, urgently requesting money for some important reason.

Maybe they've "been in an accident" or they've "been arrested."

They'll usually ask you to keep quiet and not tell anyone—especially their parents—about this phone call. After all, that could expose the call as fraudulent when you realize your actual grandchild is fine.

Anyone who isn't aware that voice cloning is a thing could easily fall for such a scam. But even if you are aware, you could still be fooled if you aren't paying careful attention. And even if you

do suspect that something is off, would you want to be the one accusing your grandchild of being an imposter? They'd just deny it, anyway.

That's the trouble with this scam, and plenty of people are falling for it every day. As AI-powered voice cloning grows more widespread, you can expect this scam to explode in popularity.

Here's how you protect yourself: Have a family

meeting and agree on a code word to be used in emergencies. Then, if you ever get a call from a family member who desperately needs money, have them confirm the code word. If they can't, then they're probably a scammer. 🔴

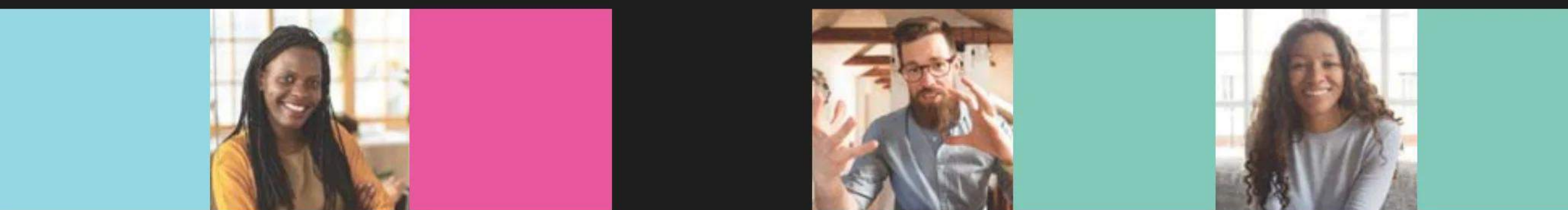


A grandparent scam involves a scammer pretending to be their grandchild via voice cloning.

IMAGE: PROSTOCK-STUDIO/SHUTTERSTOCK



DROP THE F*BOMB



TALK TO YOUR KIDS ABOUT FENTANYL

Fentanyl is being used to make counterfeit pills and is being laced into other illicit drugs. Make sure your teens know the facts.

Learn the facts on fentanyl and start a life-saving conversation with your teen.

DropTheFBomb.com



Tech Spotlight

A video showcase
of the latest trends



Watch the
video at
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oiXysmWUij8](https://youtu.be/oiXysmWUij8)

Is 8GB Enough for Laptops?

→ In this video Gordon compares two identical Framework 13 laptops to see the difference between 8GB and 16GB of LPDDR in average usage — not benchmarks!